

State of California
California Environmental Protection Agency
AIR RESOURCES BOARD

**Final Statement of Reasons for Rulemaking,
Including Summary of Comments and Agency Response**

PUBLIC HEARING TO CONSIDER THE ADOPTION, AMENDMENT AND REPEAL OF
REGULATIONS REGARDING CERTIFICATION PROCEDURES
AND TEST PROCEDURES FOR
GASOLINE VAPOR RECOVERY SYSTEMS

Public Hearing Dates: March 23, 2000
Agenda Item No.: 00-3-2

I. Introduction

On March 23, 2000, the Air Resources Board (the "Board") conducted a public hearing to consider the amendment of nine certification and test procedures, the adoption of five new test procedures and the repeal of one test procedure. This regulatory action is called Enhanced Vapor Recovery (EVR).

At the March 23 public hearing, the Board adopted Resolution 00-9 approving the amendment of regulations that incorporate by reference the new and revised certification and test procedures. The revised regulations are Title 17, California Code of Regulations (CCR), Sections 94010, 94011, 94148, 94149 and 94154. The incorporated amended certification and test procedures are:

Method D-200	Definitions for Certification Procedures and Test Procedures for Vapor Recovery Systems
Revised Title:	Definitions for Vapor Recovery Procedures
Method CP-201	Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities
Method TP-201.1	Determination of Efficiency of Phase I Vapor Recovery Systems of Dispensing Facilities without Assist Processors
Revised Title:	Volumetric Efficiency for Phase I Systems
Method TP-201.1A	Determination of Efficiency of Phase I Vapor Recovery Systems of Dispensing Facilities with Assist Processors

Revised Title:	Emission Factor for Phase I Systems at Dispensing Facilities
Method TP-201.2	Determination of Efficiency of Phase II Vapor Recovery Systems of Dispensing Facilities
Revised Title:	Efficiency and Emission Factor for Phase II Systems
Method TP-201.2A	Determination of Vehicle Matrix for Phase II Vapor Recovery Systems of Dispensing Facilities
Revised Title	Determination of Vehicle Matrix for Phase II Systems
Method TP-201.2B	Determination of Flow versus Pressure for Equipment in Phase II Vapor Recovery Systems of Dispensing Facilities
Revised Title:	Pressure Integrity of Vapor Recovery Equipment
Method TP-201.2C	Determination of Spillage of Phase II Vapor Recovery Systems of Dispensing Facilities
Revised Title:	Spillage from Phase II Systems
Method TP-201.5	Air to Liquid Volume Ratio

The Board approved further amendment to section 94011 and adoption of new section 94163, title 17, CCR, which incorporate five new test procedures by reference. The new methods are:

Method TP-201.2D	Post Fueling Drips from Nozzle Spouts
Method TP-201.2E	Gasoline Liquid Retention in Nozzles and Hoses
Method TP-201.2F	Pressure-Related Fugitive Emissions
Method TP-201.2H	Determination of Hazardous Air Pollutants from Vapor Recovery Processors
Method TP-201.2O	Pressure Integrity of Drop Tube Overfill Protection Devices

The Board approved further amendment to section 94011 and repeal of section 94151, title 17, CCR, to reflect that the test method incorporated by reference in the regulations is no longer used to test vapor recovery systems. The test method is:

Method TP-201.3A	Determination of 5 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities
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The Board approved amendment of Title 17, CCR, Section 60030 to provide procedures and time periods applicable to applications for certification of vapor recovery systems for gasoline dispensing facilities, as required by Government Code sections 15375 and 15376.

After consideration of formal comments received during the 45-day public comment period prior to the hearing, the Board directed staff to modify the regulations and provide a further 15-day period for public comment on these modifications. The modified regulations were made available to the public for comment between September 29, 2000, and October 27, 2000, pursuant to Government Code Section 11346.8(c). The "Notice of Public Availability of Modified Text" was mailed with the modified text of the regulations by September 29, 2000, as required by Title 1, CCR, section 44.

A Staff Report was prepared as the Initial Statement of Reasons for the proposed rulemaking. The Staff Report was released on February 4, 2000, and is incorporated by reference herein. The Final Statement of Reasons updates the Staff Report by explaining why the proposed test methods were modified, as well as summarizing the public comments received and presenting the Board's responses to the comments.

Fiscal Impacts. The Board has determined that this regulatory action will create costs, as defined in Government Code section 11346.5(a)(6), to the Air Resources Board, a State agency, and State agencies that operate their own gasoline dispensing facilities, which includes the Department of General Services, Department of Transportation (Caltrans), and the California Highway Patrol. However, this regulatory action will not create costs or savings to any local agencies and will not affect federal funding to the State. The Board has also determined, pursuant to Government Code section 11346.5(a)(6), that these amendments will not create costs or impose a mandate upon any local agency or school district, whether or not it is reimbursable by the State pursuant to Part 7 (commencing with section 17500), Division 4, Title 2 of the Government Code; or affect other non-discretionary savings to local agencies. The Board has also determined, pursuant to Government Code section 11346.3, that the regulation may affect small businesses.

The adopted regulation is a "major regulation" within the meaning of Health and Safety Code section 57005 (enacted by Senate Bill 1082: Stats. 1993, ch. 418), because the regulation will have an economic impact on the state's business enterprises in an amount exceeding ten million dollars. In preparing the regulatory proposal, the ARB staff considered the potential economic impacts on California business enterprises and individuals. A detailed discussion of these impacts is included in the ISOR.

Consideration of Alternatives. The amendments proposed in this rulemaking were the result of extensive discussions and meetings involving staff and representatives of the affected equipment suppliers, gasoline dispensing facilities (GDFs), and local and

state agencies. Staff seriously considered all of the alternatives proposed by industry and adopted many of their proposals. Moreover, the staff considered all of the alternatives inherently provided by the staff proposal's modular design. In short, staff's final proposal to the Board, and the modifications to that proposal made by the Board, account for numerous alternatives provided by both stakeholders and the ARB staff's proposal.

As described in the ISOR ("Economic Impacts of Proposed Standards," Ch. VI, ISOR, pp.70-90), the staff's economic impacts analysis reflects the wide variety of alternatives considered by staff as a result of the proposal's modular design. In essence, staff evaluated the economic impact of each individual module separately on five different size classes of GDFs. As a result, the economic impact analysis was designed to evaluate a **minimum** of 31 alternatives (i.e., each of six different modules applying separately to each of five different size classes of GDFs, plus 1 scenario where all six modules apply to all five GDF classes). Additional alternatives comprising different combinations of the various modules and GDF classes were also considered. Finally, alternatives consisting of "adopt no new standards" and "adopt more stringent standards" were also considered and discussed (see "Analysis of Regulatory Alternatives," Ch. VIII, pp.101-102).

As discussed in the FSOR and ISOR, this rulemaking has several objectives. First, the amendments are designed to remediate various problems identified by the local air districts and ARB staff relating to the certification, implementation, and enforcement of the existing vapor recovery program. Second, the amendments serve to partially fulfill ARB's commitments under the 1994 California State Implementation Plan for ozone (ozone SIP). In a related matter, the amendments are also designed to satisfy the portion of the recent SIP lawsuit settlement relating to enhanced vapor recovery equipment. Finally, the amendments are designed to achieve maximum feasible and cost-effective reductions of hydrocarbons as part of the ARB's efforts to attain the state ambient air quality ozone standard as early as practicable, as well as to reduce ambient levels of particulate matter and benzene.

Upon consideration of the economic impact analysis and comments received from interested stakeholders, the Board determined that only the staff's proposal, with modifications as determined by the Board, would meet the objectives described above while providing cost-effective reductions in a reasonable time frame. During the 45- and 15-day comment periods, no alternatives or combination of alternatives were submitted to the ARB which would be equally as effective as the proposed regulation (i.e., no alternatives, or combination of alternatives, were submitted which would achieve at least the equivalent level of environmental protection within the same time frame as the proposed regulation).

As noted earlier, the Board has also determined that, pursuant to Government Code section 11346.3, the regulation may affect small businesses. The Board has further determined that no alternative was presented or considered which would be more

effective in carrying out the purpose for which the regulatory action was proposed, or which would be as effective and less burdensome to affected private persons, than the adopted regulation.

II. Changes to the Originally Proposed Certification and Test Procedures

At the hearing the staff presented, and the Board approved, modifications to the regulations originally proposed in the Staff Report released on February 4, 2000, in response to comments received and continuing review since the Staff Report was published. The modifications affect the text of certification and test procedures D-200, CP-201, TP-201.1, TP-201.1A, TP-201.2, TP-201.2B, TP-201.2C, TP-201.2D, TP-201.2E, TP-201.2F, TP-201.2H, TP-201.2O and TP-201.5. The modifications are set forth in the Notice of Availability of Modified Text dated September 29, 2000. Additional modifications resulting from comments received on the September 29, 2000 changes are set forth in the Notice of Availability of Modified Text dated December 12, 2000.

Modifications to the Text of the Proposed Regulations and Detailed Statement of Reasons

Modifications to D-200

For clarity, definitions have been added for "effective date," "Executive Order," "existing installations," "leak detection solution," "major modifications," "new installations," "operative date," "portable fuel container," "spitback," "summer fuel," "vapor recovery system for a gasoline dispensing facility (GDF)," and "winter fuel." CARB (California Air Resources Board), CFR (Code of Federal Regulations), CT# (cargo tank number), EO (Executive Order), ID (inside diameter), ID# (identification number), LDS (leak detection solution) and N₂ (nitrogen) were added to the acronyms section. The abbreviations "eng. eval.," "sec.," "spec.," and "std." have been defined as "engineering evaluation," "section," "specification" and "standard," respectively.

Modifications to CP-201

As originally noticed, CP-201 section 2.4 and Table 2-1 described the effective and operative dates for all performance standards and specifications. Many changes have been made in the effective and operative dates to allow for a more orderly certification process and reasonable implementation of the new requirements. The amended CP-201 section 2 clarifies that the effective date of adoption for all performance standards and specification shall be April 1, 2001 except as otherwise specified in Table 2-1. Table 2-1 has been revised to amend the operative dates for Phase I systems, ORVR compatibility, spillage, the 350 ml liquid retention limit and the 100 ml liquid retention limit. Revised Table 2-1 changes the effective date for nozzle post-fueling drips and assist nozzle vapor valves. Requirements relating to in-station diagnostics (ISD) have been amended to require a phase-in of ISD based on station throughput. In

consideration of costs, stations with throughputs of less than 160,000 gallons/year are exempt from ISD requirements. As originally noticed, Table 2-1 required monitoring of dispenser-based vacuum pump failure, central vacuum unit failure and A/L ratios of zero. These three requirements have been incorporated in the ISD monitoring section in the amended CP-201. As originally noticed, CP-201 required phase-in of liquid retention requirements in three stages: 350 ml/1000 gallons, 200 ml/1000 gallons and 100 ml/1000 gallons. To simplify, and allow more time for implementation, the 200 ml/1000 gallon requirement has been eliminated, and the operative date for the 100 ml/1000 gallon requirement has been modified from April 1, 2003 to April 1, 2004. Requirements for leak-tightness of connectors and fittings that were present in CP-201 text as originally noticed, have been added to Table 2-1 in the revised CP-201 for consistency.

Amendments to Health and Safety Code section 41954, effective January 1, 2001, affect the certification requirements of vapor recovery systems. One of the changes requires that state board "shall test" (modified from "may test") gasoline vapor recovery systems for the purpose of determining whether the systems may be certified. Thus, portions of CP-201 that allowed engineering evaluation as an alternative to testing have been revised to require both engineering evaluation and testing. These include section 2.4.3, Table 3-1, Table 4-1, Table 5-1, Table 6-1, Table 7-1, Table 8-1, Table 8-2 and Table 16-2.

The ORVR compatibility requirements in Table 2-1 and Table 4-1 have been revised to be consistent with the revised Phase II standard. A footnote has been added to Table 2-1 to advise that amendments to Health and Safety Code section 41954 require certification of only those systems that are ORVR compatible after January 1, 2001. The April 1, 2003 operative date is retained as systems certified before January 1, 2001 may continue to be sold and installed until April 1, 2003.

CP-201, Table 3-1 summarizes the Phase I performance standards and specifications. As originally noticed, pressure settings and leak rate requirements for underground storage tank vent pipe pressure/vacuum relief valves were listed as standards, these requirements have been revised to specifications to be consistent with the definitions of performance standard and performance specification in section 2 of CP-201. Similarly, the containment box requirements have been changed from standards to specifications. Table 3-1 and corresponding section 3.7 have been modified to clarify that vapor, not liquid, connections and fittings are subject to the leakrate requirements. The static pressure performance requirement in Table 3-1 has been revised to reference section 3.2 of CP-201, rather than TP-201.3 to avoid the practice of specifying standards in the test procedures.

As originally noticed, section 3.1 specified two standards (98% efficiency and 0.15 lbs per 1000 gallons) which are not always equivalent. Section 3.1 has been modified to clarify that the emission factor of 0.15 lbs/1000 gallons applies only to systems with processors because the volumetric efficiency standard cannot be measured for a

system with a processor.

Section 3.2 has been revised to clarify that the leak decay requirements for Phase I systems are independent of the Phase II system and provides a new equation to determine allowable Phase I leak decay.

As originally noticed, section 3.3 did not specify a test procedure to determine compliance with the allowable leak rate for drop tubes with overfill protection devices. Section 3.3 has been modified to reference TP-201.2O for this purpose. Language has been added to section 3.4.1 to clarify that both the product and the vapor adaptors shall not leak. Two methods for testing the Phase I vapor adaptor, bagging or leak detection solution, are now provided in Table 3-1 and section 3.4.2.

Section 3.5 has been changed to clarify the leakrate requirements for pressure/vacuum (P/V) valves and specify TP-201.2B as the test procedure for determining compliance with the leak rate limits. An editorial correction was made in section 3.5.3 to the P/V valve leak rate to specify that it is to be determined in cubic feet per hour at 2.0 inches H₂O.

Section 3.6 has been revised to reference TP-201.2B to determine drain valve leak rates. Section 3.6.1 has been modified to clarify that cover-actuated drain valves shall be tested with both the lid installed and with the lid removed. New language has been added to section 3.6.2 to clarify the allowable use of drain valves at Phase I product connections. Section 3.6.4 has been modified to clarify when an alternative means of evacuating fuel from a containment box is required. As originally noticed, section 3.6.5 required that a small hand pump be carried on every cargo tank delivery vehicle as a means of evacuating fuel from a containment box. This section has been deleted, as it is not applicable to the Phase I certification.

Changes to section 3.7 clarify that vapor connections and fittings, which are not certified with an allowable leak rate, shall not leak. Section 3.7 has been revised to clarify that liquid (not gaseous) leak detection solution is to be used for testing vapor connections and fittings. A cross-reference to California's regulation for fuel specifications is added to section 3.8.

CP-201, Table 4-1 has been revised to be consistent with the modifications to sections 4.1 through 4.12 as described below. As originally noticed, fifteen of the sixteen requirements in Table 4-1 were listed as standards. Nine of the fifteen are now designated as specifications, as compliance with the requirements is based on engineering evaluation and functional testing.

As originally noticed, section 4.1 provided a Phase II system emission factor limit of 0.38 lbs per 1000 gallons dispensed. This standard has been modified as it is recognized that this emission factor limit is more stringent when testing using higher volatility winter fuels. However, efficiency limits for both summer and winter fuel should

be comparable. The new standard provides that tests using summer fuel shall meet 95% efficiency and the 0.38 lbs/1000 gallons emission factor. Tests using winter fuel shall meet 95% or the 0.38 lbs/1000 gallon emission factor. Throughout section 4, the requirements reflect this modification to the standard. Language has also been added to section 4.1.1 to clarify that the entire 200-vehicle test matrix, including both the ORVR-equipped portion of the vehicle test matrix and the non-ORVR-equipped portion of the vehicle test matrix must meet these requirements.

As originally noticed, section 4.2.1 referred to TP-201.3 to determine the static pressure performance standard. This conflicts with the goal to incorporate all the standards in the certification procedure. The test procedure (TP-201.3) provides the means to determine compliance with the standard. The amended section 4.2, as modified, thus includes equations to determine the appropriate standard for various balance and vacuum assist systems. TP-201.3, Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities, has been retained as the applicable test procedure for determining compliance with the static pressure performance requirement for Phase II systems.

Section 4.6 provides underground storage tank pressure criteria. As originally noticed, section 4.6 provided that Phase II systems that cause fugitive emissions to exceed 50% of the allowable emission factor could not be certified. Amended section 4.6 provides that systems having the potential to emit fugitives greater than 50% of the emission factor may not be certified. This change allows disapproval of certification for systems which have the potential for excessive fugitive emissions, although the emissions might not have occurred under the conditions experienced during certification testing.

As originally noticed, section 4.6.1 provided an exclusion for time periods associated with Phase I operations. As Phase I operations are a normal part of station activities, it was recognized that evaluation of Phase II systems should include periods associated with Phase I operations which are conducted correctly. However, it is not reasonable to penalize the Phase II system for excess emissions due to improper Phase I operations. The revised section 4.6.1 allows exclusion of non-compliant Phase I operations as specified in sections 4.1.2 and 4.1.3 of CP-204.

Section 4.6.2, which provided for calculation of hourly and daily pressures, has been removed. Information on pressure data collection is now contained in new section 4.6.4.

Section 4.6.2 (renumbered from 4.6.3) has been modified to clarify that the integrity of the vapor recovery system, rather than the underground storage tank, is presumed inadequate if the pressure does not deviate from atmospheric pressure. Section 4.6.3 (renumbered from 4.6.4) has been revised to clarify that only positive pressures are included in the daily pressure averages.

A new section 4.7.3 has been added to specify required spout dimensions as spouts

which do not meet these requirements can decrease the efficiency of the vapor recovery system. These requirements parallel federal requirements specified in title 40, Code of Federal Regulations, section 80.22 (f) (2).

Section 4.8 specifies liquid retention requirements. Language regarding testing parameters has been deleted as the parameters are appropriately specified in TP-201.2E.

Section 4.10 discusses nozzle/dispenser compatibility. Section 4.10.2 has been revised to require that the nozzle cannot be hung on the dispenser with the nozzle valves, rather than the hold-open latch, in the open position. This change recognizes that emissions occur through the open nozzle valves, independent of the position of the hold-open latch.

Section 4.11 requires the unihose configuration for gasoline dispensers. Based on comments received as to the considerable cost to upgrade existing dispensers to meet this requirement, the revised regulation allows that dispensers installed before the effective date of this requirement are exempt, unless the facility replaces more than 50% of the dispensers or makes a modification, other than the installation of required sensors, that modifies over 50% of the dispenser piping. As finalized, section 4.11 also allows that dispensers that are damaged due to accident or vandalism may be replaced with the previously installed type of dispenser.

Section 4.12 provides requirements for vapor return piping. A new section 4.12.1 has been added to specify that the vapor return path shall be free of liquid blockage, as liquid blockage can reduce vapor recovery system efficiency. The subdivisions have also been renumbered. To avoid a restriction in the vapor piping, section 4.12.3 has been revised to include the float vent valve, if applicable, in the piping required to have a 3-inch minimum nominal internal diameter. Section 4.12.4 has been modified to clarify that minimum vapor return piping slope requirements apply per foot of run. To clarify that flexible piping is not acceptable for vapor recovery lines, section 4.12.4 has been revised to require that vapor recovery piping consist of rigid piping, be contained in rigid piping, or equivalent, to ensure that proper slope is achieved and maintained. Section 4.12.5 has been added to parallel the requirement in Table 4-1 that the Executive Officer is to establish the maximum allowable length of vapor return piping.

Table 5-1 summarizes the performance standards and specifications for balance vapor recovery systems. Several standards have been changed to specifications to be consistent with the definitions in CP-201, section 2. The proposed standard for balance nozzles to have an insertion interlock and be equipped with a vapor check valve has been revised to a proposed specification. The vapor check valve leakrate has also been revised from a performance standard to a performance specification. Table 6-1, which lists the performance standards and specifications for assist systems, mirrors these changes for assist nozzles. New section 6.1.4 clarifies that the nozzle

pressure drop specifications for assist nozzles will be established during certification.

Section 5.2 contains dynamic pressure drop criteria for balance systems. Language specifying requirements for installed systems has been removed as it is not pertinent to system certification.

Section 6.1 has been rearranged to form two sections. Language has been added to clarify that assist nozzle pressure drop shall be specified by the applicant and verified during certification. A reference to TP-201.5 has been added to determine air-to-liquid ratio range.

Section 7.1 has been modified to clarify that the operating range of a vacuum unit shall be specified in the application and verified during certification.

Tables 8-1 and 8-2 summarize the performance standards and specifications applicable to Phase II assist systems using destructive and non-destructive processors. Amendments to Tables 8-1 and 8-2 are consistent with the revisions to sections 8.1 through 8.3 as follows. The benzene emission limits for both destructive and non-destructive processors have been removed from Table 8-1, Table 8-2 and section 8.1 based on comments which suggested that benzene limits should be applied to all systems, not just systems with processors. Additional test method development is necessary before a benzene limit can be applied to all system types. Section 8.1.2, as originally noticed, provided emission limits for carbon monoxide and oxides of nitrogen. This section has been removed as these pollutant limits are still being evaluated. The emission factors for 1,3-butadiene, formaldehyde and acetaldehyde for destructive processors have been recalculated based on a risk assessment analysis. Section 8.2, as originally noticed, required that hazardous air pollutants (HAPs) created by the processor shall not increase health risk by more than one in one million and that the 1,3-butadiene emissions shall not exceed 0.04 lbs/year. The risk assessment analysis allows the risk values to be translated into measurable emission limits. The revised section 8.2 provides HAP emission limits of 1.2 lbs per year for 1,3-butadiene, 36 lbs per year for formaldehyde and 84 lbs per year for acetaldehyde. Table 8-1, as originally noticed, limited the maximum hydrocarbon rate to the processor to 1.9 lbs/1000 gallons, but there was no corresponding limit in the text of the procedure. Section 8.3 has been added to limit the maximum hydrocarbon feedrate to the process and the limit has been increased to 5.7 lbs/1000 gallons. The maximum feedrate limit is necessary to limit excess emissions in the event of processor failure. Section 8.5 has been added to parallel the requirement in Tables 8-1 and 8-2 that processor operation time is to be established during certification.

Section 9.2 has been revised to clarify that for systems that include components not manufactured by the applicant, the applicant shall provide information that shows that all components meet the warranty requirements. These requirements reflect warranty provisions added to CP-201 in April 2000.

Section 9.3.1 requires system manuals that contain requirements for proper installation, maintenance and inspection procedures. Section 9.3.1 has been revised to allow the Executive Officer to require inclusion of additional procedures in the manuals. This is necessary as the system certification process may reveal periodic testing or maintenance, other than what is suggested by the manufacturer, is needed to maintain emission control. Section 9.3.3 has been modified to clarify that system manuals be provided to the owner/operator of the GDF at the time the vapor recovery system or component is installed and not to all subsequent owner/operators.

As originally noticed, section 10 provided requirements for in-station diagnostics. This section has been revised to be consistent with the detailed new appendix on in-station diagnostics (ISD), which is described later in this notice, and to reflect that ISD is not required for gasoline dispensing facilities that dispense less than 160,000 gallons per year.

Section 11 described the application process for vapor recovery system certification. As originally noticed, section 11 required that test results that demonstrate that the primary performance standard can be met, must be included in the system application. New language has been added which expands the scope of the test results required to be included in the system application to all applicable performance standards and specifications. This includes test results for an operational test of at least 30 days and a test of at least 50 vehicles or equivalent verification that the system can meet certification requirements. This data requirement will help assure that systems have been thoroughly evaluated and tested by the manufacturer before entering the certification process.

Information regarding in-station diagnostics originally noticed in section 11.2 has been revised and placed in the Appendix.

As originally noticed section 11.8 required that the request for test-site designation include information about the site, including as-built drawings. Section 11.8.4 has been added to expand upon the requirement and allow other options if as-built drawings are unavailable.

Section 11.9 has been added to reflect a requirement adopted in an earlier rulemaking (adopted April 28, 2000 and filed with the Secretary of State on June 12, 2000). This provision requires applicants to notify the certification holder when seeking to add equipment to an existing certification, and to notify all other equipment manufacturers when forming a new system for certification.

Section 13.1 provides requirements for the certification test site. Language has been added to Section 13.1 to allow test site designation for the purposes of conducting the testing to obtain data for the preliminary certification application. The revised 13.1 also states that the Executive Officer may require that the system be installed in more than one facility for testing purposes in order to completely evaluate the system

performance. As originally noticed, section 13.1.1 required a minimum throughput of 200,000 gallons/month. Concerns were raised that this high throughput would limit the number of available test sites and thus limit the number of systems seeking certification. The revised section 13.1.1 requires a minimum throughput of 150,000 gallons/month, but provides that the Executive Officer may, for good cause, approve a test station with a lower throughput, as long as it is at least 100,000 gal/month. As originally noticed, section 13.1.3 contained information regarding compliance of test sites which was unclear. Section 13.1.3 has been deleted, leading to renumbering of the following sections. As originally noticed, section 13.1.5 (now 13.1.4) provided that uncertified equipment be removed within sixty days if test status is terminated for any reason. However, if the company wishes to reapply for certification, it may be burdensome to require removal of the vapor recovery equipment. Revised section 13.1.4 allows that the Executive Officer may extend this time, as long as it is a written extension. Originally noticed section 13.1.6 (now 13.1.5) has been revised to clarify that all test data shall be made available to the Executive Officer within 15 working days and that the Executive Officer may specify the format for the data submittal. Section 13.1.6 has been added to allow for designation of test sites for system evaluation (i.e. not certification testing) subject to Executive Officer approval. This allows the system applicant to install equipment to generate the test data required for the certification application as described in section 11.1 of CP-201.

Section 13.3 contains the requirement for the operational test of at least 180 days. The vapor recovery system under evaluation must meet all performance standards and specifications during this test. As originally noticed, section 13.3.4 provided that the pressure in the underground storage tank be monitored and recorded continuously throughout the operational test. However, this data is only valid if the vapor recovery system meets pressure integrity standards. The revised section 13.3.4 also requires that pressure integrity testing be conducted throughout the operational test at intervals not to exceed thirty days. Only data collected during periods of pressure integrity shall be deemed valid. Section 13.3.4 has been modified to reference the UST pressure standards. Section 13.3.5, as originally noticed, required that a 3% change in performance tests over the operational test period could result in termination of the operational test. However, some commenters protested that the 3% change was within the error band of some of the test procedures. The revised 13.3.5 better addresses the intent of the operation test in that if performance tests during the operational test show a change that results in the degradation of a performance standard or specification when extrapolated through the end of the warranty period, the Executive Officer may extend or terminate the operational test.

Section 13.4 specifies failure mode testing requirements. Minor changes have been made to make the language consistent with the change in the primary standard. Section 13.4.2 has been revised to be consistent with the CP-201 Appendix for ISD.

Section 13.6 discusses the vehicle matrix requirements for certification testing. Vapor recovery equipment manufacturers have raised concerns that vehicles which do not

meet California requirements have unfairly biased vapor recovery certification testing. A new section 13.6.3 provides that vehicles failing to meet vehicle fillpipe specifications may be excluded from the test matrix. Section 13.6.5 has been modified to delete unnecessary explanation of the provision providing for testing of additional vehicles after the vehicle test matrix is filled. Section 3.6.6 has been changed to clarify which vehicles can be deleted from the test matrix based on efficiency/emission factor determinations.

The text of section 15 has been included in section 17 (as renumbered), "Documentation of Certification." As originally noticed, the section required preparation of a certification process summary. Language has been added to clarify that the items listed shall be included in the summary, but that additional items not listed may also be included.

Section 15 (renumbered from 16) provides that vapor recovery certifications are not transferable. As originally noticed, the certification was to expire as of the date of transfer if the ownership control of the certification holder were to change. Comments received indicated that this was not equitable for the certification holder or the customers who had purchased the system. The revised section 15.2 allows the expiration date of the certification to remain unchanged after a certification transfer. However, the system may not be sold or installed until the system is recertified under the new ownership.

Language has been added to renumbered section 15 to require that the Executive Officer shall certify only vapor recovery systems that can be expected to comply with the system's certification over the warranty period. This is consistent with the revisions to Health and Safety Code 41954 (c)(1)(B) which are effective January 1, 2001.

Table 16-2 (renumbered from 17-2) lists the non-system specific components that may be evaluated under abbreviated testing as compared to system specific components. As requested by a vapor recovery equipment manufacturer, dispenser vapor piping for balance system dispensers has been added to Table 16-2 as the dispenser vapor piping meets the non-system specific component criteria.

Renumbered section 17 has been revised to add applicable performance standards, performance specifications, operating parameters, limitations, warranty and factory testing requirements to the items included in the certification Executive Order. These items are necessary for district inspectors to properly permit and inspect installed vapor recovery systems.

As originally noticed, section 18 (renumbered from 19) provided the duration and conditions of certification. Section 18.3 has been revised to clarify that significant deficiencies, rather than merely deficiencies, be documented and brought to the attention of the equipment manufacturer.

Section 19 (renumbered from 20) provides restrictions on equipment which may be used for systems for which certification has been terminated. The revisions to section 19 clarify that the section is applicable to systems that may remain in use pursuant to Section 41956.1 of the Health and Safety Code. Section 19.1.5 has been added to parallel the provision in section 4.11, which permits continued use of dispensers with multiple hoses under specified conditions. Clarifications are made to section 19.1.2 as to allowable use of system components.

ISD Appendix to CP-201

The criteria for in-station diagnostics (ISD) has been removed from section 10 of CP-201 and placed in the appendix to CP-201. The ISD appendix contains the modified requirements for vapor recovery monitoring systems.

The provisions have been significantly expanded and include general requirements, monitoring requirements, an implementation schedule, and requirements for records, tampering protection, readiness/function code, stored vapor recovery system conditions, description of GDF vapor recovery ISD system, monitoring system demonstration, failure mode testing, and signal access. These requirements are necessary to define minimum criteria for ISD systems. The requirements are based on extensive research into available monitoring capacity and functions and discussions with manufacturers, districts, and other state agencies.

All systems are required to monitor underground storage tank pressure to assess pressure integrity. ISD will monitor the air-to-liquid (A/L) ratio for assist systems and the vapor collection flow performance for balance systems. For vapor recovery systems with processors and/or central vacuum units, ISD is required to monitor additional parameters: vacuum at one-minute intervals and processor functioning.

Modifications to TP-201.1

The title of this procedure was originally noticed as "Volumetric Efficiency for Phase I Systems at Dispensing Facilities." It has been revised to "Volumetric Efficiency for Phase I Systems" to simplify reference of the test procedure.

As originally noticed, section 3.3 noted that unusual cargo headspace volumes could bias the test results, but did not define acceptable headspace conditions. Revised section 3.3 requires that the cargo tank headspace volumes be between 3.0 and 10.0 % of total cargo tank capacity prior to delivery.

Section 5.6 specifies the barometer for ambient pressure measurement. As originally noticed, the accuracy requirements for the barometer was 5 ml (0.2 inches) of mercury. The accuracy requirements have been tightened to 1 ml (0.04 inches) of mercury as this reflects the accuracy of instruments currently available.

Minor changes have been made to Equation 9.2 to clarify equation terms.

As originally noticed, TP-201.1 did not provide for approval of alternate procedures. In some cases, modification of the test procedure is necessary to accommodate the situation at the test site. Section 11.1 has been added to provide terms for approval of alternate procedures.

Modifications to TP-201.1A

Section 1 has been revised to clarify the applicability of the test procedure and describe the purpose of the test.

As originally noticed, TP-201.2 had a warning box near the beginning of the procedure to generally alert the tester of the hazards of working near gasoline vapor. This warning has been removed and specific warnings have been imbedded in the steps of the test procedure, which should be more helpful to the tester.

Section 2 provides the principle and summary of the test procedure. This section has been condensed and unnecessary explanations have been removed.

Section 5 provides test equipment specifications. As originally noticed, section 5 provided information of the operation of various hydrocarbon analyzers. The revised section 5.1 eliminates this background information and simply defines the hydrocarbon analyzer specifications needed to conduct the test. Similarly, specifications for other pollutant analyzers, volume meters and other test equipment have been condensed in the revised section 5.

Section 5.11 has been added to describe requirements for calibration gases, which will improve the accuracy of the emission measurement. Section 5.12 has been added to specify an acceptable gas dilution system, which is necessary to provide accurate data if dilution is warranted. Section 5.13 has been added to require a data acquisition system or data recorder that is also necessary to record data for emission measurement.

Section 6 provides the equipment calibration requirements. Section 6.1 has been revised to conform to the analyzer calibration requirements of ARB SOP 054, "Standard Operating Procedure for the Multilevel Calibrations of Pollutant Gas Analyzers." Section 6.2 has been added to specify calibration gas requirements consistent with USEPA protocols. These two changes are necessary to ensure USEPA approval of methods using continuous analyzers. The revised section 6.3 provides a calibration alternative for volume meters, to allow flexibility for test personnel. The revised section 6.4 changes the calibration requirements for pressure measurement devices so that the device is calibrated over the range of operation during the test. Section 6.5 has been condensed to focus on periodic calibration of the temperature measurement devices. Field checks of temperature measurement devices have been relocated to section 8.

As originally noticed, Section 7 provided information on the test site location, as well as specification of test, challenge and failure modes. These sections have been removed as these requirements are already set forth in the certification procedure, CP-201 and are not necessary in the determination of the Phase I emission factor.

As originally noticed, section 8 contained the steps of the testing procedure. As modified, the steps of the testing procedure are reorganized in various sections, principally sections 8, 9, and 10. Sections 8.1.1 through 8.1.3 have been deleted as these sections deal with challenge mode testing and alternative test procedures. Alternatives will be evaluated on a case by case basis as stated in section 13. As originally noticed, section 8.1.2.3 provided simplifying assumptions for incinerator testing. Section 8.1.2.3 has been deleted to ensure testing consistency. As originally noticed, section 8.1.2.4 contained requirements for visual emissions. Section 8.1.2.4 has been deleted as visible emissions are not included in the Phase I emission factor.

As originally noticed, section 9 contained information on quality assurance and quality control. Similar information is now found in sections 6 and 8 of revised TP-201.1A. In addition, sampling system bias checks have been added in section 8.2 and 10.1 to improve data quality.

As originally noticed, Section 10 provided data recording methods, but did not specify the frequency of data collection. The revised TP-201.1A section 5.13 makes data acquisition system requirements similar to other ARB test methods and specifies the frequency of data collection.

As originally noticed, sections 10 and 12 discussed chain-of-custody, necessary and sufficient data, reconciliation of reported results to recorded data and permanent records. These criteria are now described only in section 12.

Section 13 regarding alternative procedures has been revised to be consistent with the other vapor recovery test procedures and the Certification Procedure CP-201.

Modifications to TP-201.2

TP-201.2 has been completely revised for several reasons. First, the change in the primary emission standard for Phase II systems to allow both emission limit and efficiency determination for summer fuel necessitated a rewrite of the test procedure. Second, several sections of TP-201.2 as noticed were found to be in conflict with the certification procedure, CP-201. Also, TP-201.2 as noticed contained numerous testing alternatives that defeat the goal of a standard test approach. These alternatives have been removed, however, modifications on an as-needed basis may be used if approved by the Executive Officer. TP-201.2 has also been reformatted to be consistent with the other vapor recovery test procedures.

The title of TP-201.2 has been changed to reflect the revised Phase II standard. As

originally noticed, the title of TP-201.2 was “Emission Factor for Phase II Systems.” The revised TP-201.2 title is “Efficiency and Emission Factor for Phase II Systems.”

As originally noticed, TP-201.2 had a warning box near the beginning of the procedure to generally alert the tester of the hazards of working near gasoline vapor. This warning has been removed and specific warnings have been imbedded in the steps of the test procedure, which should be more helpful to the tester.

Section 2 provides the principle and summary of the test procedure. This section has been condensed and unnecessary explanations have been removed.

Section 3 discusses biases and interferences that may affect the test results. This section has also been condensed to remove unnecessary explanations. As originally noticed, section 3.1.2(4) excluded vehicle fuelings of less than four gallons. In the revised TP-201.2, section 3.5 excludes vehicle fuelings of less than six gallons to better represent typical fueling of vehicles with larger fuel tanks. As originally noticed, section 3.1.2(6) excluded vehicles equipped with ORVR vehicles. The revised TP-201.2 requires that ORVR vehicles be included as defined in the 200-car vehicle test matrix specified by TP-201.2A.

Section 4 sets forth the sensitivity, range and precision of the test procedure. As originally noticed, Section 4 did not provide values for these parameters. The revised Section 4 provides values for sensitivity, range and precision based on a measurement error analysis.

Section 5 provides test equipment specifications. As originally noticed, section 5 provided information of the operation of various hydrocarbon analyzers. The revised section 5.1 eliminates this background information and simply defines the hydrocarbon analyzer specifications needed to conduct the test. Similarly, specifications for other pollutant analyzers, volume meters and other test equipment have been condensed in the revised section 5. As originally noticed, section 5 did not allow a combination of flame ionization detector (FID) and non-dispersive infrared (NDIR) instruments unless it could be demonstrated that differences in analyzer response did not bias the test results. The revised section 5 specifies a combination of FID and NDIR detectors, which are checked in the field to assure no bias occurs. Other equivalent measurement methods may also be used, if approved by the Executive Officer. This allows the tester flexibility as long as demonstration can be made that the instruments achieve equivalent results.

As originally noticed, section 5.8.2 required measurement of balance nozzle bellows pressure during fueling episodes. This measurement has been deleted in the revised TP-201.2 as there is no corresponding standard in CP-201.

Section 6 provides the equipment calibration requirements. Section 6.1 has been revised to conform to the analyzer calibration requirements of ARB SOP 054, “Standard

Operating Procedure for the Multilevel Calibrations of Pollutant Gas Analyzers". Section 6.2 has been added to specify calibration gas requirements consistent with USEPA protocols. These two changes are necessary to ensure USEPA approval of methods using continuous analyzers. The revised section 6.3 provides a calibration alternative for volume meters to provide flexibility for test personnel. The revised section 6.4 changes the calibration requirements for pressure measurement devices so that the device is calibrated over the range of operation during the test.

As originally noticed, Section 7 provided information on the test site location, specification of test, challenge and failure modes, limits on V/L ratios, limits on nozzle operations for systems with processors, specifications for vapor piping, evaluation of ORVR vehicles, Phase I delivery requirements, system pressure integrity and damage to nozzle components. These sections have been removed as these requirements are already set forth in the certification procedure, CP-201 and are not necessary in determination of the emission factor or efficiency of Phase II systems.

Section 7, pre-test requirements, has been revised to include pressure integrity testing, equipment set-up at each test point and documentation of test site vapor recovery equipment. The pressure integrity testing is required to check integrity before disturbing the site to install the test equipment. Details on equipment set-up is necessary for test technicians to install equipment properly. Documentation of the test site vapor recovery equipment is necessary to verify exactly what equipment makes up the system that is being tested.

As originally noticed, section 8 contained the steps of the testing procedure. As modified, the steps of the testing procedure are reorganized in various sections, principally sections 8, 9, 10 and 11. Section 8.1.1 described three vehicle leak check alternatives. The revised TP-201.2, section 9.3, contains one vehicle leak check procedure for consistent measurement. As originally noticed, section 8.1.6 provided instructions for idle nozzle emission measurement for when the nozzle is not being used for dispensing gasoline. Measurement of idle nozzle emissions have been removed, however, data will be collected immediately after a refueling episode to ensure all vapors associated with a vehicle fueling are collected (see section 9.4.3)

As originally noticed, section 8.2 provided alternatives for measurement of fugitive emissions. TP-201.2 has been revised to reference only TP-201.2F for pressure-related fugitive emission measurement for consistency. Information in section 8.4 regarding vapor processor testing has been condensed and portions removed which are already addressed in the certification procedure. Section 8.6, as originally noticed, identified the vapor return line as an optional test point. In the revised TP-201.2, this test point is required for calculation of vapor recovery system efficiency. As originally noticed, section 8.6.2 directed testing for balance nozzle bellows pressure. This section has been removed as there is no corresponding standard in CP-201.

As originally noticed, section 9 contained information on quality assurance and quality

control. Similar information is now found in sections 6 and 8 of revised TP-201.2. In addition, sampling system bias checks have been added in section 8.3 to improve data quality.

As originally noticed, Section 10 provided data recording methods, but did not specify the frequency of data collection. The revised TP-201.2 section 5.2 makes data acquisition system requirements similar to other ARB test methods and specifies the frequency of data collection. The sections dealing with calculation of results have been updated to be consistent with the revised emission factor and efficiency standards.

Modifications to TP-201.2B

The name of the test procedure has been shortened and clarified to reflect the purpose of the test procedure. Section 13 regarding alternative procedures has been revised to be consistent with the other vapor recovery test procedures and the Certification Procedure CP-201.

Modifications to TP-201.2B, Appendix 1

Section 2.1 has been revised to clarify that determination of the valve “cracking pressure(s)” is the goal of this procedure. Section 2.1.1 and 2.1.2 have been interchanged.

Section 5 has been revised to include equipment specifications for mechanical pressure gauges, P/V valve weight and nitrogen source supply. This equipment is necessary to conduct the test. Minor changes have been made to section 6 to clarify the pre-test procedure. Section 7 has been modified to clarify the steps involved in testing the P/V valve. Section 9 has been added to illustrate calculation of test results.

Modifications to TP-201.2C

TP-201.2C has been updated to improve the spill calibration procedure and to include spill volumes from gasoline drops and vehicle spills, which also contribute to emissions.

Section 2.1, as originally noticed, required that the vapor recovery nozzles and associated hardware be inspected and found in good working order pursuant to section 41960.2 of the Health and Safety Code. This language has been revised to refer instead to the detailed list of defects in title 17, CCR, section 94006, which is more helpful to the tester.

Section 3.5 notes that the specific weight of gasoline may vary due to temperature and compositional differences and thus could bias the test results. As originally noticed, section 3.5 suggested that the tester measure the specific weight of the dispensed gasoline to eliminate the bias. This was seen as overly burdensome to the tester to correct a slight bias, so the revised section 3.5 directs the tester to use 6.28 as the

specific weight of gasoline unless otherwise directed by the Executive Officer.

As originally noticed, section 4.1 contained information to show that single drops of gasoline spilled during refueling lead to significant aggregate emissions. This information has been deleted as it is not pertinent to the test procedure.

Section 4.2 has been revised to include the sensitivity and precision of the test procedure, which is necessary to assess whether test results are outside the error band of the method. As originally noticed, Section 4.3.2 contained a reference to large spills reported in an API study. The API study reference has been removed as unnecessary to conducting the test procedure.

As originally noticed, section 5.4 specified a non-sparking tape measure as equipment needed for the test, but was silent on what was being measured. The revised section 5.4 clarifies that tape measure is used to quantify the spill areas and the calibration pour height.

Section 6.1.1 has been revised to clarify that only applicable facilities are subject to the test procedure. Section 6.2.1 has been revised to remove unnecessary instructions. Section 6.3.5 has been revised to correct the omission of the 10 ml pour.

Section 6.4.4 has been renumbered to make the number sequential and revised similar to section 2.1 to refer to the defect list in CCR 94006. Section 7.8.2 has been revised to clarify the recording of the nozzle orientation during fueling. Section 9.1 has been revised to alert the tester that the portion of the spill event quantified as drops is not subject to calculation of the spill area.

As originally noticed, TP-201.2C did not provide for approval of alternate procedures. In some cases, modification of the test procedure is necessary to accommodate the situation at the test site. Section 11.1 has been added to provide terms for approval of alternate procedures.

Modifications to TP-201.2D

Section 1 sets forth the purpose and applicability of the test procedure. Section 1.1 has been revised to clarify that this procedure is intended for use during the certification process to determine compliance with the allowable nozzle drips standard as defined in CP-201.

As originally noticed, section 2.1 required that the nozzle's shut-off mechanism is in good working order. The revised section 2.1 clarifies that this is the nozzle's primary shut-off mechanism. Section 2.2 has been revised to clarify that the number of drips of gasoline is quantified while the nozzle is inverted for a period of five seconds.

As originally noticed, TP-201.2D did not specify the number of test runs required to

determine compliance with the standard. The new section 2.3 clarifies that compliance with the performance standard specified in CP-201 shall be determined using the combined average result of the ten test runs for each nozzle tested. Section 2.3 also clarifies that a minimum of ten nozzles shall be tested for certification.

As originally noticed, TP-201.2D did not include nozzle spitback as a possible bias. Section 3.3 has been added to alert the tester that spitback may bias the test towards noncompliance and spitback occurrences should be noted on the field data sheet. Spitbacks due to vehicle fillpipes that do not comply with vehicle standards are not included.

As originally noticed, section 4.1 contained information to show that single drops of gasoline spilled during refueling lead to significant aggregate emissions. This information has been deleted as it is not pertinent to the test procedure.

The sensitivity and precision of TP-201.2D have been included in section 4.2 which is necessary to assess whether test results are outside the error band of the method. Section 4.3 has been added to limit the applicability of the test to refueling events of at least 4.5 gallons as fuelings which are less than 4.5 gallons are not representative of typical fuelings and may bias the test results. Section 5.2 has been revised to clarify the stopwatch requirements.

As originally noticed, the test procedure description in section 7 was unclear. Section 7 has been revised to clarify the nozzle orientation and use of stopwatch during the test. Section 7.7 has been added to establish that ten test runs per nozzle are required to be consistent with section 2.3. Figure 1 has been added to illustrate nozzle orientation terminology.

Sections 8 and 9 have been revised to clarify how test results are averaged. Section 10 has been updated to make reporting of results consistent with data calculations.

As originally noticed, TP-201.2D did not provide for approval of alternate procedures. In some cases, modification of the test procedure is necessary to accommodate the situation at the test site. Section 11.1 has been added to provide terms for approval of alternate procedures.

Modifications to TP-201.2E

Section 1 sets forth the purpose and applicability of the test procedure. Section 1.1 has been revised to clarify that this procedure is intended for use during the certification process to determine compliance with the liquid retention standard as defined in CP-201.

As originally noticed, TP-201.2E did not specify the number of test runs required to determine compliance with the standard. The revised section 2.1 clarifies that

compliance with the performance standard specified in CP-201 shall be determined using the combined average result of all applicable nozzles under test.

As originally noticed, TP-201.2E did not include "topping off" as a possible bias. Section 3.3 has been added to alert the tester that "topping off" may bias the test towards noncompliance and test runs where topping off occurs should be noted on the field data sheet, but not included in the calculation of average liquid retention.

As originally noticed, TP-201.2E did not include information on sensitivity, range and precision. Section 4 has been added with this information which is necessary to assess whether test results are outside the error band of the method. A stopwatch has been added to the equipment list in section 5.4, which is needed to measure the time periods specified in section 6.

Section 6.5.4 has been added to clarify that ten test runs shall be conducted for each nozzle and the average of all applicable nozzles under test shall be used for compliance determination as provided in section 2.1.

Calculations relating to calculation of mass and efficiency loss have been deleted as these calculations are not pertinent to the standard. Section 8 contains the new calculations necessary to determine the liquid retain in terms of ml per 1000 gallons dispensed. The instructions on reporting results in have been updated to be consistent with the revised calculations in section 9.

As originally noticed, TP-201.2E did not provide for approval of alternate procedures. In some cases, modification of the test procedure is necessary to accommodate the test situation. Section 10.1 has been added to provide terms for approval of alternate procedures.

Modifications to TP-201.2F

As originally noticed, TP-201.2F was silent on whether the test method was to be used for certification, compliance testing, or both. Section 1.1 has been revised to clarify that the procedure is applicable to certification testing.

As originally noticed, TP-201.2F referenced the pressure decay procedure set forth in TP-201.3. As several modifications have been made to the common pressure decay test, the reference to TP-201.3 has been removed and details of the pressure decay testing are instead included in TP-201.2F to avoid confusion. Section 2.1.1 has been added to require monthly pressure decay tests during the operational test to allow data collection for fugitive emission determination. Additional pressure decay tests are required before and after conducting TP-201.2 as specified in section 2.1.2. Section 2.2.3 has been added to specify that the initial pressure for the decay test is 2.00 inches water and the test duration is 20 minutes. Section 2.2.4 has been added to require measurement of ambient temperature to ensure pressure decay measurements

are not masked by atmospheric changes over the test.

Section 3 lists the biases and interferences that may affect the test results. Section 3.1 has been modified to clarify that hydrocarbon concentration should be measured at the top of the underground storage tank. Section 3.4 has been added to emphasize that because pressure integrity may vary, the average of the pre- and post-TP-201.2 pressure decay tests is used to calculate the fugitive emissions.

Section 4 sets forth the sensitivity, range and precision of the test procedure. Section 4.1 has been revised to remove language which is more appropriate for equipment specifications and add the pressure measurement sensitivity. Section 4.3 has been updated to include the sensitivity of the flowmeter.

Section 5 provides the equipment requirements. Section 5.4 has been revised to indicate which equipment will check vapor growth rate prior to test. As originally noticed, section 5.7 specified a flame ionization detector (FID) for hydrocarbon concentration measurement. Section 5.7 has been modified to allow both FID and non-dispersive infrared (NDIR) measurement options to offer flexibility to the tester. Section 5.9 has been added to specify a tank gauging stick to measure underground storage tank liquid levels as specified in section 6.4.2. Section 5.10 has been added to specify an ambient temperature measurement device in order to conduct the test in section 7.8.

Section 6 contains the pre-test procedures. Minor edits have been made to clarify activities that take place before the test. As originally noticed, section 6.2 required that product dispensing not take place during the thirty minutes immediately prior to a test. The revised section 6.2 increases the thirty minutes to sixty minutes to ensure that the system has come to equilibrium. As originally noticed, section 6.3 required a minimum ullage of 25% of the tank capacity, or 500 gallons, whichever is greater. The revised section 6.3 requires a minimum ullage of 2000 gallons. This provides sufficient ullage to conduct the test without having to know the tank capacity. Section 6.4 has been modified to remove the unnecessary reference to TP-201.3. Section 6.4.2 has been revised to clarify how to check liquid level in the drop tube. Section 6.10 has been added to describe the proper placement of the ambient measurement device.

Section 7 describes the test procedure itself. Minor edits have been made to clarify the steps of the test procedure. Section 7.2.1 has been added to check whether vapor growth is occurring in the underground storage tank before conducting the decay test. Section 7.4 has been revised to allow bleeding off pressure if necessary to reach 2.00 inches water initial starting pressure. Section 7.5 has been modified to reflect the change in the test duration from five minutes to 20 minutes and add the requirement to record ambient temperature. Section 7.8 has been added to invalidate the test if the ambient temperature changes more than five degrees Fahrenheit during the twenty minute test period. These revisions are in response to comments that changes in ambient conditions will bias the test results.

Section 9 provides equations for calculating results. Changes have been made in the equations to make them consistent with a twenty-minute, rather than a five-minute, pressure decay test.

As originally noticed, TP-201.2F did not provide for approval of alternate procedures. In some cases, modification of the test procedure is necessary to accommodate the situation at the test site. Section 11 has been added to provide terms for approval of alternate procedures.

Section 12 provides an example calculation of the test results. The equations in section 12 have been updated to make them consistent with a twenty-minute, rather than a five-minute, pressure decay test. Similarly, Form 1 has been revised to be consistent with a twenty-minute test.

Modifications to TP-201.2H

Several sections have been updated to identify citations for the various methods referenced.

As originally noticed, section 2.2 contained several undefined acronyms referring to sample analysis. Changes to section 2.2 have been made to define the analytical acronyms.

Section 3.4 as originally noticed stated that particulate matter biases have not been investigated. As this bias has not been investigated for any of ARB stack testing methods, this sentence has been removed. Section 3.8 has been modified to clarify acceptable sample size for bag sampling.

Section 4 has been changed to clarify sensitivity, range and precision. Section 4.2, as originally noticed, stated that the precision of the method has not been determined. This sentence has been removed as information on precision is not likely to be available due to the large number of sample runs needed to calculate statistical measures of precision.

Section 5 contains the equipment specifications. Section 5.1.2 has been modified to clarify the type of hydrocarbon analyzer recommended for the inlet measurement. Section 5.2 describes the sampling for benzene and 1,3-butadiene measurement. Minor changes have been made to the sampling procedure to clarify the requirements for sampling using Tedlar bags or canisters.

Section 7 provides the pre-sampling procedures. New sections have been added to check the pressure integrity of the vapor recovery system within 24 hours before collecting the exhaust samples. This is necessary to ensure the system meets leakrate standards before conducting the emission measurement. Section 7.1.2 describes a leak check procedure for systems that operate under negative pressure. Section 7.2

requires that air to liquid volume ratio (A/L) tests be conducted within 72 hours prior to collecting exhaust samples. The A/L tests are necessary to ensure the system meets A/L standards before conducting the emission tests.

Section 8 describes the sampling procedure. Section 8.7 has been modified to show that sampling should begin at the start of the processor fan or pump, rather than by rising stack temperature, as the intent is to measure emissions during the processor operation period. Section 8.7.3 (renumbered from 8.1.3) has been changed to require use of a chain-of-custody sample record as well as a sample log. The chain-of-custody record is important when test samples are transferred to a laboratory for analysis to properly document sample conditions.

Section 12 provides the test calculations. In response to comments that pollutants in ambient air may bias the test results, section 12.5 has been changed to subtract the ambient concentration from the exhaust concentration if the ambient concentration is greater than or equal to 10% of the exhaust concentration.

Section 14 sets forth the criteria for use of alternative procedures. This language has been changed to be consistent with the other vapor recovery procedures.

Section 15 discusses the test method references. A new section 15.2 describes where to find ARB methods 1002, 1003 and 1004.

Sections 16.3 and 16.4 have been added to list figures for the chain-of-custody sample record and the chain-of-custody sample log described in section 8. Figures 3 and 4 have been added to depict the chain-of-custody sample record and the chain-of-custody sample log.

Modifications to TP-201.20

Section 3 lists possible biases and interferences that can affect test results. Section 3.2 has been revised to disallow any bulk deliveries during the test as deliveries may bias the test results. Section 3.4 has been added to require that liquid levels in the drop tube should be below the location of the overfill device. If the liquid level were above the overfill device, the liquid may mask a leak in the overfill device. A new section 3.5 warns that leaks in the test equipment may bias the test and requires use of leak detection solution during the test.

Section 4 has been revised to clarify the sensitivity, range and precision of the test procedure.

Section 5 provides test equipment specifications. Section 5.1 has been revised to limit the flowmeter range to 1.0 cubic feet per hour (CFH) to ensure that higher flows are not used during the test. Section 5.8 has been added to describe the tank gauging stick used to verify underground storage tank liquid levels.

Section 6 describes pre-test procedures. Section 6.1 has been revised to reference the ARB calibration methodology for flowmeters. Section 6.5 has been amended to clarify that a tank gauging stick is used to verify tank liquid levels.

Section 7 presents the steps of the test procedure. Section 7.2 has been revised to clarify that underground storage tank should be at atmospheric pressure at the start of the test. Section 7.3 has been modified to add a leak check of the test equipment, which is necessary to ensure any leaks measured are only in the vapor recovery equipment. Section 7.4.2 clarifies that the tester should wait ten seconds for the pressure to reach steady-state conditions.

Section 9 contains equations for calculating results. Section 9.1 has been revised to clarify how to calculate the leakrate of the drop tube assembly.

As originally noticed, TP-201.2O did not provide for approval of alternate procedures. In some cases, modification of the test procedure is necessary to accommodate the situation at the test site. Section 11.1 has been added to provide terms for approval of alternate procedures.

Modifications to TP-201.5

The title of TP-201.5 has been shortened from “Determination (by Volume Meter) of Air to Liquid Volume Ratio of Vapor Recovery Systems of Dispensing Facilities” to “Air to Liquid Volume Ratio” to simplify future references to this procedure.

Section 1 has been modified to clarify that all nozzles which are compatible with the test procedure may be tested, regardless of nozzle design. Revisions to section 2.1 replace the “rotary gas meter” with a “volume gas meter.” This change allows any volume meter which meets the meter specifications to be used as rotary gas meters can be costly. Section 2.2 clarifies that the tester should make sure there are no leaks at the P/V valve if the P/V valve is reinstalled after the test.

Section 3 lists biases and interferences that can affect the test results. Modifications to section 3.2 clarify the required dispensing rates are necessary for compliance A/L testing, but not certification A/L testing. As originally noticed, section 3.5 required automatic removal of a nozzle from service if the nozzle introduces liquid into the test equipment. Removal of a nozzle is beyond the scope of the test procedure and section 3.5 has been revised to require that if the nozzle introduces liquid into the test equipment, this results in a failure of the A/L test. Section 3.8 has been added to alert the tester of possible bias if adaptor O-rings are not maintained properly as discussed in section 6.5.

Section 5 provides the testing equipment specifications. Minor changes have been made to clarify equipment requirements.

Section 6 outlines the pre-test procedures. Section 6.5 has been modified to clarify requirements for O-ring lubrication. Section 6.6 has been revised to more clearly explain the A/L adaptor leak check procedure. Figure 4, which depicts the A/L adaptor leak test assembly has been revised to be consistent with the text changes.

Section 7 provides the test procedure. Section 7.9 has been modified to clarify the acceptable A/L range for conducting one test run. Section 7.11, which required that the A/L test be conducted on each nozzle at a facility, has been deleted as this test is also applied during certification tests, which require multiple A/L runs on each nozzle.

Section 8 discusses the post-test procedures. As originally noticed, section 8.2 prohibited mixing of product grades in the portable tank. Commenters pointed out that prohibiting product mixing will inconvenience the tester and could increase disruption of station operation. Section 8.2 has been changed to allow mixing of grades in the portable tank assembly if approved by the facility owner. Section 8.2.1 clarifies that if the P/V valve must be removed, the P/V valve is to be replaced after the last A/L run is completed.

As originally noticed, TP-201.5 did not provide for approval of alternate procedures. In some cases, modification of the test procedure is necessary to accommodate the situation at the test site. Section 11 has been added to provide terms for approval of alternative procedures.

Reconsideration of Repeal of TP-201.3A

As originally noticed, TP-201.3A, known as the 5-inch pressure decay test, was proposed for repeal as it is no longer in use for vapor recovery systems used with underground storage tanks. However, comments received indicate that this procedure is needed to determine compliance with aboveground tank pressure integrity requirements. Therefore, TP-201.3A is now proposed to be retained.

Minor Editorial Corrections

Throughout the Certification Procedure and the Test Procedures clarifying cross-references have been added and terminology, numbering and grammar have been corrected.

III. Summary of Comments and Testimony Received in Response to 45-Day Notice and Received at Hearing and Agency Responses

List of Comments Received (written comments unless otherwise noted)

<u>Reference</u>	<u>Company or Individual</u>	<u>Date</u>
API	American Petroleum Institute	3/23/00

	Jeff Trask (written and oral testimony)	
ARCO	ARCO Products Company Alan L. Lippincott	3/13/00
ARID	ARID Technologies Tedmund P. Tiberi	3/17/00
BAAQMD	Bay Area Air Quality Management District Ellen Garvey (written comments) Peter Hess (oral testimony)	3/16/00 3/23/00
Bokides	Mel Bokides Petroleum, Inc. Nick Bokides (oral testimony)	3/23/00
BPAmoco	BP Amoco Oil Ann McCabe	3/21/00
Chevron	Chevron Products Company Mike Vomund	3/09/00
CIOMA	California Independent Oil Marketers Association Jay McKeeman (written and oral testimony)	3/17/00
CSSARA	California Service Station and Automotive Repair Association Dennis DeCota (oral testimony)	3/23/00
CAPCOA	California Air Pollution Control Officers Association Larry Greene (written and oral testimony)	3/20/00 3/23/00
Containment	Containment Solutions Steven Allwein	3/17/00
Con Vault	Con Vault, Inc. David Harris (oral testimony)	3/23/00
Data Action	Data Action on behalf of the Petroleum Marketers Association of America (PMMA) Gene Mittermaier	3/15/00
EBW	EBW Peter Violino, Jim Biesecker (written and oral testimony)	3/23/00
Eco Vault	Eco Vault, Inc. Paul McWhorter (oral testimony)	3/23/00

Glenn County	Glenn County Air Pollution Control District Kevin Tokanaga (written and oral testimony)	3/20/00 3/23/00
Guardian	Guardian Containment Systems Bill Beck (oral testimony)	3/23/00
Hazlett	Hazlett Engineering Company Wesley Hazlett	3/06/00
Healy	Healy Systems, Inc. James W. Healy (oral testimony)	3/23/00
Hirt	Hirt Combustion Engineers, Inc. (two letters) Robert D. Bradt, Ph.D. Thomas J. Smith	2/07/00 3/3/00
Husky	Husky Corporation Grenville G. Sutcliffe (written and oral testimony)	3/16/00 3/23/00
INCON	INCON – Intelligent Controls, Inc. Alan Lucas	3/16/00
Kavlico	Kavlico Corporation Daniel Kane (written and oral testimony)	3/20/00
LADWP	Los Angeles Department of Water and Power Jodean M. Giese	3/22/00
Marconi	Marconi Commerce Systems, Inc. (formerly Gilbarco) Hal C. Hartsell, Jr.	3/17/00
OPW	OPW Fueling Components Donald L. Leininger Donald L. Leininger Donald L. Leininger (oral testimony)	2/25/00 3/15/00 3/23/00
PG&E	Pacific Gas and Electric Company James Theodore Holcombe	3/23/00
San Diego	San Diego County Air Pollution Control District R. J. Sommerville	3/16/00
Siskiyou	Siskiyou County Air Pollution Control District William J. Stephans	3/22/00

SWRCB	State Water Resources Control Board Mary Drewry (written and oral testimony)	3/23/00
TRI	Technology Resources International, Inc. Wolf H. Koch	3/22/00
Tokheim	Tokheim Corporation Richard L. Tucker	3/21/00
TOSCO	TOSCO Robert Staab	3/14/00
Veeder-Root	Veeder-Root J. Flora, R. Hart, J. Vorih (written and oral testimony)	3/15/00 3/23/00
Ventura	Ventura County Air Pollution Control District Richard Baldwin (oral testimony)	3/23/00
VST	Vapor Systems Technologies, Inc. Glenn Walker	3/13/00
Wayne	Wayne Division, Dresser Equipment Group, Inc. Rick Bisker (written and oral testimony)	3/8/00
WSPA	Western States Petroleum Association Ronald R. Wilkniss (written and oral testimony)	3/22/00

The individual comments and staff responses are grouped by topic below. The topics are organized as follows:

- General Comments
- EVR Certification
- EVR Implementation Schedule
- EVR Emission Reductions
- EVR Economic Impact
- Above Ground Tanks
- Unihose Requirement
- In-Station Diagnostics
- ORVR Compatibility
- Technology Review
- Processor Limits
- Warranty
- Certification Procedure (CP-201)

Test Procedures

General Comments

1. Comment by API

API is concerned about the potential impact of the EVR proposal on other states that rely on California vapor recovery requirements. API would like to see a consistent model for vapor recovery requirements to achieve economy of scale, incentive for equipment development and similar operating experience. API supports ARB's plan to modify each existing Phase I and Phase II Executive Order to allow continued use of existing equipment in other states as provided in California's Health and Safety Code. API supports and offers assistance in convening a meeting with regulators from other states to discuss the EVR program.

Response

As directed by the Board in Resolution 00-9, the ARB will incorporate language into both future and existing vapor recovery certification executive orders that authorizes continued use of installed vapor recovery systems pursuant to Health and Safety Code section 41956.1. Also as directed by the Board, the ARB and API convened a meeting with regulators from other states on July 13-14, 2000 that discussed EVR and its possible impacts on vapor recovery programs outside California.

2. Comment by BAAQMD

The BAAQMD supports the EVR vapor recovery amendments to reduce 14 tons/day of excess emissions in the Bay Area. This level of emissions is equivalent to emissions from an oil refinery. The BAAQMD supports the in-station diagnostic program and will work with ARB on the ISD pilot program and testing of ISD systems. The BAAQMD supports the implementation schedule changes for Modules 2 and 6. The BAAQMD points out that ARB must provide adequate staffing to support the EVR program. The BAAQMD provided specific support on 26 EVR amendments.

Response

We appreciate the involvement and support of the BAAQMD in developing and implementing EVR.

3. Comment by Bokides

Mr. Bokides is the president of the California Independent Oil Marketers (CIOMA). He opposes the EVR proposal because the six weeks between issuance of the staff report (ISOR) and the Board meeting was not enough time for the small businesses to comment on the proposal.

4. Comment by CIOMA

CIOMA requests a delay from the Board in addressing the EVR proposal as the 45-day public review as the review period fell during a time when CIOMA members were encountering daily, if not hourly, price increases in their supplies, necessitating focus on their business operations, not a 900 page set of regulations. CIOMA believes ARB should more fully include stakeholders in the development of regulations and in the ongoing assessment of technology and implementation. 45 days to review a body of work that has taken thousands and thousands of person-hours to develop is inadequate, unfair and unrealistic.

Response

Nine workshops and numerous meetings were conducted during the two years before the March 23, 2000 Board meeting. Representatives from CIOMA were present at most of the workshops and participated in meetings with ARB staff in summer of 1999 to discuss EVR. While the Administrative Procedure Act (APA), Government Code section 11346.4, requires a minimum 45-day notice and comment period, the ARB provided a 48-day comment period, February 4, 2000 to March 23, 2000.

5. Comment by Bokides

The EVR proposal implies that equipment used today is not meeting current requirements. Service station owners get fined when the district comes out and equipment doesn't work. If we can make better nozzles, then make them now. The equipment manufacturers are taking advantage of EVR to increase their future profits and sell more equipment. The equipment manufacturers just got done with underground tanks, now we are going to vapor recovery.

Response

The vapor recovery equipment in use today met the certification requirements at the time it was certified, but field studies show that equipment is not as durable as it should be. The EVR amendments strengthen certification requirements so that new equipment will stay in compliance longer. Additionally EVR imposes new and amended standards and specifications for nozzle performance. These requirements are not binding unless adopted as regulatory standards. Although improved equipment components, such as nozzles, may cost a little more, the benefits of increased performance will lead to fewer emissions.

6. Comment by BPAmoco

BPAmoco concurs with API comments in support of changes to the EVR proposal that increase certainty and flexibility and address timing concerns for stakeholders outside California. BPAmoco supports a rigorous technology review and supports changes CARB may make to delay the effective dates of the technology forcing provisions of the EVR proposal.

Response

We agree, but believe that technology advances will demonstrate that further

delays are unnecessary.

7. Comment by CAPCOA

CAPCOA supports the EVR proposal and will continue to support the joint CAPCOA/ARB process addressing both current system shortfalls and implementation of the new systems. Air districts must be an integral part of planning and evaluating vapor recovery enhancements since they permit and inspect facilities in the field and enforce both district and state requirements. EVR includes provisions that districts will be a part of the review process for certification applicants. CAPCOA supports recent agreements to provide more time for development of new systems. CAPCOA appreciates ARB staff commitment to training for operators and district staff, as well as development of certification programs for contractors. CAPCOA will work with ARB staff to establish an efficient process for tracking and resolving equipment problems. CAPCOA supports a joint effort to identify Title 17 defects for EVR systems, provide lists of defective components to districts and ensure manufacturers either fix component problems or take them off the market. Another joint effort is the development of simple field test procedures. CAPCOA urges ARB to maintain the necessary staff to correct current system deficiencies while EVR is being implemented. CAPCOA points out that the ultimate goal of EVR is public health protection.

Response

We appreciate the involvement and support of CAPCOA in developing and implementing EVR. We reiterate our commitment to address existing system deficiencies while implementing EVR.

8. Comment by Glenn County

A working committee composed of CARB and SWRCB staff should be formed to discuss and resolve issues that affect both agencies. These include: Enhanced Vapor Recovery, Enhanced Leak Detection and Monitoring, UST pressure monitoring and influence of groundwater, siphoned (manifolded) tanks, existing monitoring systems (false positives, alarms and the ability of the operator to deal with problems) and development of a joint test site where the certification (of equipment and contractors) could be accomplished.

Response

We agree. Staffs from both agencies are already meeting monthly to address the issues raised, as well as others.

9. Comment by Guardian

Guardian Containment Systems produces armor-cast and armor-vault fuel storage tanks. Part of the problem (in commenting on EVR) is the 2-inch thick book. But somebody mentioned that there's going to be testing for stations quarterly. Guardian doesn't think there are enough trained people to do it once

a year. Although clean water and air are important, there are some things that you push to the point beyond reasonability.

Response

The districts mandate testing frequency of vapor recovery systems under the authority granted in Health and Safety Code sections 40701 and 42301. Some districts are advocating quarterly testing to keep the stations in compliance. Testing will likely diminish with the advent of the in-station diagnostics systems, which will provide continuous monitoring of system operation.

10. Comment by Husky

Husky believes we have a rare opportunity to truly enhance vapor recovery by enhancing equipment performance and adopting standardized, repeatable scientific testing of components and systems. Husky knows that many of the proposed nozzle requirements are doable and that other nozzle requirements, such as nozzles that are “drip-less,” are doable in time.

Response

We agree.

11. Comment by Husky

Once the EVR standards have been set, and we manufacturers have spent hundreds of thousands (if not millions) of dollars on design, development and testing of new equipment to meet the new EVR standards, it will be for naught if there is no effective enforcement. The problems with some of today’s equipment did not become apparent until the advent of annual pressure decay and A/L testing. When Husky products fail, our customers, the stations, and the oil companies yell at us. But even worse, they stop buying from us. When even that threat arises, it’s amazing how fast product performance is enhanced. CAPCOA have the power to fine or shut down non-complying stations. CARB has the power to fine and/or shut down non-complying manufacturers. When the pain of non-compliance exceeds the cost of compliance, vapor recovery will be enhanced.

Response

We agree that an enforcement presence is necessary to ensure compliance of certified equipment installed in service stations. CARB will continue to work with the districts to resolve and identify equipment problems. The new in-station diagnostics, once implemented, will force corrective action to be taken when equipment failures occur.

12. Comment by LADWP

LADWP recommends that CARB publish at regular intervals a list of companies that are able to provide the required equipment and services until this program is well under way after 2006. LADWP further recommends that CARB rely on

independent test labs to certify that the equipment meets the manufacturer's performance claims. Sometimes the manufacturers are overly optimistic about the performance of their equipment and publish product data sheets that may overstate equipment performance. CARB should verify claims made by manufacturers not only in independent test labs but also with field performance trials of considerable time (i.e., three or more years) under variable operating conditions (e.g., variations in weather, rough handling of equipment, variations in fuel characteristics).

Response

We will continue to post information on systems meeting ARB certification requirements on the ARB website. Testing to verify that standards are met will be done by ARB staff or by contractors hired by ARB (CP-201 section 13). The certification test requirements include an operational test which evaluates equipment field performance, including effects of weather, consumer handling of equipment, and exposure to winter and summer fuels, over a minimum of 180 days (CP-201 section 13.3). Questionable product claims related to ARB standards should be brought to the attention of ARB staff for investigation.

13. Comment by LADWP

LADWP recommends that CARB require that the equipment manufacturers provide substantial guarantees on the performance of the equipment they sell. The end user should not be left with equipment that does not perform adequately after a few months and then have to retrofit all over again with another manufacturer's equipment. In addition, LADWP recommends that a list of qualified manufacturers be compiled, provided to end users, and updated regularly.

Response

CP-201, Section 9.2 requires a minimum one-year warranty for vapor recovery equipment. The warranty shall include the ongoing compliance with all applicable performance standards and specifications. The manufacturer may specify that the warranty is contingent upon the use of trained installers. Information on manufacturers of certified vapor recovery equipment is already available on the ARB website.

14. Comment by LADWP

It may be that the requirements of one or more modules, such as modules 3, 4 and 5 are not achievable under real operating conditions over a considerable length of time. In this case, LADWP recommends that CARB identify this situation as such and remove the requirement.

Response

As directed in Board Resolution 00-9, ARB will complete an EVR Technology Review by April 2002 to make determinations on the feasibility of all EVR

requirements. Staff may then recommend modifications to the EVR program as warranted.

15. Comment by LADWP

To ensure low or no gasoline or VOC leakage, LADWP believes that there is a need to standardize equipment at the Phase I and Phase II interface to ensure proper fit.

Response

We agree and will work towards standardization of fueling interfaces. Phase I interface choices are already fairly limited. It may be difficult to introduce new dispenser/vehicle interfaces that will allow fueling of all vehicles in the on-road population.

16. Comment by LADWP

LADWP recommends that CARB and the South Coast Air Quality Management District work closely together to arrive at a consistent set of requirements for the South Coast Basin.

Response

We will continue to work closely with SCAQMD and other districts through CAPCOA in implementing the EVR program.

17. Comment by Marconi

Effective coordination within ARB and between ARB and the AQMDs is essential to the achievement of the EVR objectives. Coordination could be improved to resolve the Bay Area requirement for ORVR compatibility by June 1, 2000 and the agreement between the EVR Team and Marconi to put mini-booted nozzles on the VaporVac systems. Our recommendation is to certify for use on VaporVac all mini-booted nozzles that are currently certified on Wayne-Vac and Max-Vac systems. This will minimize confusion, standardize nozzles and permit implementation before this summer's ozone season. As data has already been collected on these nozzles, the most that should be required is that ARB staff conduct an engineering review of the data.

Response

Additional testing was necessary to verify the mini-booted nozzles work effectively with the VaporVac system. These tests were successful and an amended VaporVac Executive Order to allow use of the mini-booted nozzles was issued July 12, 2000.

18. Comment by PG&E

It is difficult to craft a single rule that is appropriate across all jurisdictions. One way the ARB could promote both uniform control approaches and flexible implementation of those uniform controls, would be to allow emission banking

and trading. In areas with more severe problems, credits would have a higher value; creating strong incentives to put new controls into place as fast as possible. In areas with less severe air quality problems, lower cost alternatives should be readily available and banking/trading programs could correct for any program elements deemed excessively costly.

Response

The EVR proposal revised certification requirements for vapor recovery systems that may be used throughout the state. However, individual district rules direct whether vapor recovery systems are required on service stations with throughputs less than 480,000 gallons/year. Stations with greater than 480,000 per year must have vapor recovery to comply with the statewide Air Toxics Control Measure for Benzene (title 17, California Code of Regulations, section 93101). Thus, districts have some flexibility in determining whether vapor recovery will be included in their hydrocarbon control measures.

19. Comment by PG&E

Last year, PG&E supported ARB adoption of the “portable fuel container spillage regulations.” In that case the staff report estimated that the average can would cost \$9.66 additional, save 5.61 pounds over a 5 year life, and have a lifetime cost effectiveness of \$1.72/lb. But the adopted ARB regulation allows older, higher emitting cans to be sold as late as 12/31/01 [see 13 CCR 2472(e)]. This means that older, higher emitting cans could still be in service as late as 12/31/06 – or even later since there is no actual requirement that older cans ever be replaced. The point is that gasoline can replacement programs could provide similar emission reductions at a clearly cost-effective level. If concerns remain about the staff’s current proposal, the Board could adopt it with direction to the staff to come back with a suitable banking and trading program.

Response

EVR has two primary objectives. One of these is to reduce emissions; the other is to improve the durability and reliability of the systems. While the commenter's suggestion for achieving reductions from the gas cans may reduce emissions, albeit from another source, the suggestion does not meet the goal of improving durability and reliability. Further, the suggestion would be a voluntary measure, and emission reductions would not be certain to meet the requirements of the settlement for the lawsuit.

20. Comment by Siskiyou

Language that would exempt certain districts from EVR requirements is proposed to provide relief to local service stations while preserving the general public’s health. The proposed exemption would not apply to existing facilities in ozone attainment areas if the district has determined that the station annual throughput is less than 2 million gallons and the facility has Air Toxics “Hot Spots” prioritization score less than or equal to 10. The district would verify

annually that the facility continues to qualify for the exemption. The exemption would not apply if the station replaces or remodels gasoline storage tanks, dispensers or piping. The exemption would remain in effect until December 2010 or until modified.

Response

Districts already have some discretion on whether to require Phase II vapor recovery systems for service stations with annual throughput less than 480,000 gallons. Stations with more 480,000 gallons/year must have vapor recovery to meet the requirements of the benzene Air Toxics Control Measure (see 17 CCR 93101). The EVR proposal exempts stations with annual throughputs of less than 160,000 from the requirement for in-station diagnostics.

21. Comment by SWRCB

ARB and SWRCB staffs are meeting monthly to coordinate regulatory efforts and update each other on projects that may impact both air and water programs. SWRCB staff has attended several EVR workshops. ARB staff attended the March Underground Storage Tank Conference. SWRCB staff appreciates that ARB staff has arranged to install and test new UST at the ARB's EI Monte gasoline dispensing facility. Our working together has proven to be beneficial to both our agencies.

Response

We intend to continue this cooperative effort with SWRCB staff throughout the implementation of EVR.

22. Comment by San Diego

ARB must work with the air districts, system manufacturers, and the regulated industry to maximize the effectiveness of existing system installations. Under current law, a four-year period is allowed from the effective date of the EVR regulations before existing vapor recovery system installations must be replaced. The large majority of gasoline dispensing facilities in California will continue to have existing systems for three to four years after the effective date of the EVR requirements.

Response

Staff agrees that current efforts underway to improve the effectiveness of existing systems must continue. As provided in Resolution 00-9, staff are committed to working with all stakeholders in implementing near-term vapor recovery improvements, such as early implementation of the Phase I EVR requirements and reduction of A/L ratios for some assist systems to reduce fugitive emissions.

23. Comment by San Diego

ARB should work with CAPCOA to establish a formal process for reporting,

tracking, resolving and following-up on problems encountered with certified system installations.

Response

At CAPCOA's request, the proposal requires that systems certified under EVR will be of limited duration, no more than four years. As provided in section 18 (formerly section 19) of CP-201, if the system manufacturer wishes to extend the certification period, the certification may be renewed if the system has performed without any documented significant deficiencies. If there are documented significant deficiencies, these must be resolved and corrected before the renewal will be approved. This is a major change from the current certification procedure, in which vapor recovery certifications have no expiration date and no regular performance review.

24. Comment by TRI

Alternatives to EVR exist which may be just as effective and implemented sooner. This includes stepped-up enforcement and decertification of equipment that is not working. Equipment suppliers would react if their customers' stations were forced to close. USEPA bases allowable Stage II credits on inspection frequency. Weights and Measures requires annual calibrations. Decertification of non-complying systems could be run with existing resources. CARB staff does not have the resources to recertify all current systems within a year, which will cause economic harm to suppliers who cannot be recertified due to resource limitations.

Response

Enforcement efforts to ensure existing systems operate as certified will reduce emissions, but will not address emission sources identified in EVR such as ORVR compatibility, reduced spillage and pressure-related fugitives. The new in-station diagnostics requirements will provide continuous monitoring of system operation. Staff resources for vapor recovery will be increased in order to address compliance of existing systems and certification to EVR requirements simultaneously. The revised implementation for EVR allows until April 2003 to recertify Phase II systems.

25. Comment by Tokheim

Yearly calibration of systems (with field inspections), standardized customer maintenance logs and manufacturer training programs would provide air quality improvements. Even without ORVR Compatibility and In-Station Diagnostics, if all systems were working as intended, there would be significant improvements to air quality.

Response

We agree. We are working with CAPCOA to improve inspection and training programs for existing systems and future EVR systems.

26. Comment by Ventura

Vapor recovery is the most difficult enforcement program in Ventura County. After 25 years of trying to enforce the vapor recovery program, there is still a need to provide ongoing enforcement which is the key to ongoing compliance with these systems. Ventura supports the proposed changes to the vapor recovery program, in particular the in-station diagnostics.

Response

We agree and appreciate the support of Ventura County Air Pollution Control District.

27. Comment by VST

Page 102 of the staff report discusses a more stringent alternative to the staff proposal which would require continuous negative pressure in the underground storage tank. VST intends to begin certification tests this summer for both balance and assist systems with processors, operating with ISD and continuous negative pressure. Thus VST believes the more stringent proposal is feasible at this time.

Response

As stated in the staff report, this alternative was not recommended at this time due to concerns regarding currently certified processors. Implementation of this alternative could require every service station in California to install a processor. Neither VST nor any other equipment manufacturer has demonstrated a processor system that can meet all EVR requirements. When processor systems are certified to meet EVR requirements, we may reconsider the continuous negative pressure alternative.

28. Comment by VST

The only way to assure a reduction in fugitives is with negative pressure and continuous monitoring of tank pressures. Negative pressure solves the problems of ORVR compatibility, compatibility of Stage 1 and Stage 2 systems, nozzle and vent fugitives and allows elimination of pressure decay tests.

Response

We agree that negative pressure in the underground tank is desirable, but proper operation also depends on the pressure integrity of the system. Negative pressure of a leaky system can lead to air ingestion and vapor growth which may overwhelm the system processor or lead to a “too lean” vapor at the processor. Negative pressure in the UST does not guarantee Phase I and Phase II compatibility, as it may take a while for the system to return to a negative-pressure state after a gasoline delivery.

EVR Certification

29. Comment by ARID

California Law mandates that ARB certify systems. ARID points out that their PERMEATOR technology would like to be certified on several systems and that this would impose considerable costs to them.

30. Comment by EBW

The EVR proposal establishes definitive criteria for nozzles and/or vacuum source components. Where these items have demonstrated performance criteria similar to existing certified components, interchangeability could occur without affecting vapor recovery system integrity. Thus these components should be certified as “non-system specific components” as described in CP-201. EBW’s concern is that the system approach would be detrimental to the development, innovation and improvement of system components that were not available at the time of system certification. A manufacturer who offers only a part of a system could develop components offering significant advantages to system performance and reliability. The additional testing expense will likely drive some competition out of the market leading to less technological enhancement and pricing penalties to the end user.

Response to 29 and 30

CP-201 contains provisions to reduce the testing burden for components that can be considered “non-system-specific”. Testing on one system may be used in the evaluation of the component for use on other systems. However, CP-201 identifies processors, such as the ARID membrane, and nozzles and vacuum sources as “system-specific” components. These components are considered integral to a system and require full system testing on each system for which certification is desired. Staff has learned that certain components can behave differently when combined with other vapor recovery equipment and must thoroughly test systems for these components as directed by state law (Health and Safety Code section 41954).

31. Comment by Marconi

The EVR proposals appear to adequately define the objectives of the EVR program. Achieving an effective strategy to achieve these objectives will require mutual cooperation, flexibility and innovation. Several requirements are proposed to be effective in April 2001, but the current approach does not allow certification to some but not all EVR requirements, which could be counter-productive to achieving emission reductions as soon as possible. For example, if the Gilbarco VaporVac system were to demonstrate ORVR compatibility and the 2001 ISD requirement, but not have a nozzle that would meet liquid retention and “dripless” requirements, would it make sense to delay implementation of the improved VaporVac system pending availability of the required nozzle? Marconi recommends more flexibility and modularity in the approval process to allow improvements to be implemented as soon as they can be certified.

Response

The revised implementation schedule (CP-201, Table 2-1) should provide more flexibility in certifying EVR systems as several of the effective dates have been changed. A system may seek certification to any EVR standard in advance of the effective date, but must meet standards in effect at the time of certification. One exception, ARB will not certify a Phase II system to EVR standards until it has been tested with an EVR-certified Phase I system.

32. Comment by OPW

The entire EVR program encompasses significant revisions, requires redesigned systems and components, and involves new unproven technology. It is suggested that the review and certification of equipment be conducted on a modular basis rather than on the total system. This would permit improved components to be approved, and placed into service sooner, thus benefiting the vapor recovery program. At present, the procedure only permits the evaluation of the complete system which would include all of the required revisions and “in-station diagnostics” to be submitted for certification. If provisions were made available for evaluation and approval of individual components/systems, then latest technology equipment would not be held back because a “total” system is not available for the evaluation testing.

Response

State law requires that the ARB certify systems (Health and Safety Code section 41954). However, staff agrees that multiple rounds of testing are not necessary for certain system components once it has been demonstrated that certification requirements have been met. These components have been identified as “non-system-specific” components as described in CP-201, Section 17.

33. Comment by OPW

EVR will require all Stage 1 and Stage 2 equipment to be recertified. This should be done uniformly and according to the prescribed procedure. No system should be certified on assumptions of compatibility or performance from previous testing, but rather on sound engineering test methods as provided in the proposed EVR. Testing should not only be for efficiency, but for other parameters, such as emissions and ORVR compatibility, regardless of any previous testing that may have been done.

Response

We agree. All systems seeking certification to EVR requirements will undergo field testing regardless of previous test results. However, historical field data may be used in some cases to support the data needs for the certification application.

34. Comment by San Diego

San Diego wants ARB to devote sufficient staff resources and expertise to ensure that several systems are properly certified by the effective date of the regulations (April 1, 2001). San Diego is concerned that a moratorium on new facilities may occur unless at least some systems are certified to meet EVR requirements.

Response

We agree that staffing levels will need to be raised in order to effectively implement EVR, including recertification of new systems and plan to do so. However, the revised implementation schedule for EVR does provide two more years to recertify Phase II systems as the effective date has been changed to April 2003 for EVR Module 2 requirements.

35. Comment by San Diego

To ensure that systems and components have a reasonable expectation of meeting the EVR-certification standards in the field, it is essential that all systems and most interchangeable components be tested and evaluated thoroughly. ARB should not rely on past test data which may have been collected for other purposes (e.g. informational, equipment/procedure development, emissions inventory, ORVR compatibility) because that data was not subject to the same level of scrutiny that should apply to vapor recovery system certifications.

Response

We agree. However, historical data may be used in the certification application as evidence that the system or component is ready for certification testing.

36. Comment by San Diego

The staff proposal should acknowledge ARB's staff commitment to provide districts the opportunity to review certification applications, certification test proposals, test report and proposed certification documents (e.g. executive orders). To make these opportunities meaningful and productive, district must be given sufficient time to review and comment on the documents. ARB staff has stated they will work with CAPCOA to develop an agreement that specifies the procedures for making these documents available and the time allowed for review.

Response

The staff report (p.112) states that we intend to establish a process in cooperation with CAPCOA which would allow identified district engineering, enforcement and permit specialists to review certain portions of the certification applications and review the draft Executive Orders. In Resolution 00-9, the Board has directed staff to develop a Memorandum of Agreement between the Board and CAPCOA regarding the certification of vapor recovery systems that furthers district participation, within reasonable review times as provided in

section 60030, title 17, California Code of Regulations, in the certification of vapor recovery systems.

37. Comment by San Diego

Current system installations may not be able to be maintained if existing system manufacturers don't expect to meet the new EVR standards. If an existing pre-EVR certified system/component is not re-certified under the EVR requirements, the manufacturer may pull out of the market. This could create a shortage of replacement components for existing installations. ARB should take steps to ensure the availability of replacement components, particularly when EVR-certified components are not compatible with existing systems.

Response

Proposed CP-201, section 19 (originally noticed as section 20) addresses this concern and will allow limited-term certification of replacement parts to allow the system to be used for the duration of the 4-year grandfather period for existing systems. A component or replacement part not meeting the EVR performance standards, but which was certified for use with the system prior to the effective date of the new standard may be used as a replacement only if no compatible component or part that meets the new standards or specifications has been certified as a replacement and is commercially available.

38. Comment by San Diego

ARB should provide a yearly schedule of certification renewal dates to all air districts, or post a schedule on ARB's web site that is updated at least quarterly. This will allow districts to plan for gathering information on any renewals where there are concerns.

Response

We agree to make the certification renewal date schedule available on the ARB web site and update at least quarterly.

39. Comment by San Diego

System effectiveness problems have arisen when component manufacturers modify the design or materials of construction for their certified components. Not all component changes require a full certification test. However, some means should be implemented by ARB to ensure that all details of the tested components that are certified, including materials of construction and physical dimensions, are memorialized so that valid comparisons can be subsequently made when evaluating a change for certification or compliance purposes.

For example, a change in the formula for the bellows or faceplate material for a vapor recovery system nozzle, or a change in the relative location and/or angle of a faceplate, can affect the frequency of gaps in the vehicle/nozzle interface and emissions during refueling. The District has observed instances where

nozzle faceplates warp and harden over time affecting collection efficiency because of increased gaps in the vehicle nozzle interface. This is an example where problems that aren't readily apparent during certification may become issues after extended field service.

Once a problem of this nature is documented, ARB should have an established process to upgrade I&M procedures to ensure that when the problem develops at a facility, it is identified and corrected. In this case, the change in the faceplate material properties might not be on a defect list, but can significantly affect emissions capture efficiency.

Response

We agree that specifications of vapor recovery systems should be documented in detail during the certification process. CP-201 requires that the certification application include a complete description of the system, including "underground pipe sizes, lengths, fittings, volumes, material(s), etc." (section 11.1.8). If vapor recovery equipment materials are changed after certification without ARB approval, then this equipment is not considered certified.

If a durability problem is identified for certified vapor recovery equipment, the district should inform ARB staff so that information can be gathered on the potential defect and resolution of the problem can be conducted on a statewide basis. Among the possible resolutions are identification of the problem as a defect in title 17, CCR, section 94006, or in the specific executive order(s); documentation of the problem as an issue for certification renewal under CP-201 section 18 and possible decertification or amendment of certification under HSC §41954(c). Additionally, districts may act locally under HCS §41960.2(e) to require that a component be put back in good working order.

40. Comment by Tokheim

There is no need to limit certification to four years. CARB already has the right to decertify a system or system component. A device has a sellable life of 8 to 10 years. If during that time it fails to perform, no one will buy it. The marketplace will weed out equipment that does not perform.

Response

CARB retains the right to decertify a system or system component. However, a limited term certification is desired to provide a formal review of certified systems and ensure that the system is still supported by the manufacturer. Systems that perform well should not encounter any difficulty in renewing their certifications.

EVR Implementation Schedule

41. Comment by API

ARB is interested in developing a "new generation" of vapor recovery

equipment. In our view, the greatest risk to meeting the goal is improper implementation. If requirements are imposed too quickly, technology will not achieve the level it could under a longer-term approach. API is concerned that equipment may not be certified by the effective dates.

Response

Based on information from equipment manufacturers, the effective dates in the modified EVR proposal should allow sufficient time for development and certification of equipment to meet the new technology-forcing standards. This will be verified during the technology review to be completed in 2002. If necessary, modifications to effective dates will be considered.

42. Comment by LADWP

LADWP recommends that CARB determine if low or zero VOC emitting Phase I and Phase II systems and equipment are readily available from many manufacturers well before the deadline to install and use them. LADWP uses the competitive bid process to obtain its equipment at a competitive price. Therefore, it is very desirable that many suppliers have equipment that meets the CARB proposed requirements.

Response

We expect most equipment manufacturers to apply for certification well in advance of the required deadlines. Our first focus will be to certify Phase I systems to ensure Phase I equipment is available by April 2001. Note that existing facilities will have until April 2005 to upgrade equipment that is not replaced sooner to the requirements for Phase I, ORVR, liquid retention, spillage and dripless nozzles. The revised implementation schedule allows even more time for Phase II requirements, with an effective date of April 2003 and a final compliance deadline for existing systems of April 2007. These timetables should allow time for multiple equipment suppliers to obtain certification.

43. Comment by PG&E

When the underground tank program imposed simultaneous deadlines, many contractors became too busy to even talk to us, and others demanded premiums of 15% to 25% as the deadline approached. Our review of the proposal has focused upon whether simultaneous deadlines could trigger disruptions or wasteful cost premiums. Since p.49 of the staff report suggests that fully half of the control modules require technologies that are "either not yet in widespread use or are under development" attempting to avoid service disruptions or installation cost premiums through earlier compliance did not appear to be an attractive alternative. We support the revised proposal, which require existing sources to meet the new standards on a staggered basis.

Response

We agree that the revised schedule will help with contractor availability. We will

continue to work with the SWRCB staff so that underground storage tank upgrades can be coordinated with enhanced vapor recovery work where possible to achieve cost savings.

44. Comment by TRI

The implementation timeframe is not realistic. The current proposal contains unproven technology, much of which has yet to be developed. We support the four-year phase in for ISD, but question why ORVR must be implemented as of April 2001. CARB staff has performed ORVR compatibility testing at a level of up to 40% ORVR cars and found insignificant additional emissions. Both ORVR compatibility and ISD will require major changes to dispensers and cause economic hardship to station operators. It is better to implement both requirements in 2005 and incur modification costs once.

Response

The revised implementation schedule allows more time for technology-forcing EVR modules, such as ORVR compatibility, ISD and “dripless” nozzles. The ORVR operative date is now April 2003, allowing two additional years for product development and certification.

45. Comment by TRI

The 4-year grandfathering provision for current equipment is totally unrealistic, since any replacement part must be certified under the new rule, effectively eliminating the grace period for most hanging hardware and dispensers. In fact, a literal interpretation of the requirements is that a failure of hanging hardware, a nozzle or hose, would trigger a need to possibly modify the dispenser to a two-hose configuration.

Response

Health and Safety Code section 41956.1 directs that four years be allowed for continued use of systems or system components when ARB revises standards. Section 19 of modified CP-201 provides for replacement part certification during the 4-year period. Additionally, the Board approved a modification of CP-201 section 4.11 to allow continued use of multi-product dispensers until the facility is modified.

46. Comment by TRI

Throughout the last year CARB staff has emphasized that it’s new approach to Stage II requirements in future rulemaking will be based on performance standards. In the current proposals, efficiency has indeed been changed to a performance basis. However, many of the additional requirements requiring nozzles, single hose dispensers or other hardware are still based on design criteria.

Response

While some requirements are specifications that relate to design (see, for example CP-201, Table 4-1), the regulations allow for innovative systems. CP-201 section 2.3 specifies that a vapor recovery system that fails to comply with identified performance standards or specifications may qualify for consideration as an innovative system if the system meets the primary emission factor and complies with all other applicable requirements of certification.

47. Comment by Tokheim

Modules 3 (ORVR Compatibility) and 6 (In-Station Diagnostics) impact the dispenser system. Both are new, technology-stretching requirements. The timeframe to implement ISD falls more inline with the design cycle to incorporate needed changes to current systems. It makes more sense to roll out the ORVR compatibility with the ISD with an operative date of April 2004.

Response

The implementation schedule has been modified to allow more time to develop systems compatible with ORVR vehicles. The operative date for Module 3 has been delayed 2 years to April 2003. This corresponds to the new effective date for other Phase II requirements in Module 2 and should allow concurrent certification to several module standards.

48. Comment by Wayne

The effective date needs to be pushed out to at least April 2002 to allow time to recertify new systems. CARB does not have the time or the manpower in the current schedule to allow every equipment manufacturer the opportunity to compete in the market place with an approved system or system components in a timely manner. Time has not been allowed to determine the reliability of "New Technologies" for nozzles, various post processing systems, and HC sensors. Wayne's recent experience with obtaining a revised certification has resulted in delays of many months.

Response

The modified implementation timeline now provides more time to recertify systems to meet the new standards. The effective date for Module 2 requirements for Phase II systems has been changed from April 2001 to April 2003.

EVR Emission Reductions

49. Comment by ARID

ARID believes that the ARB staff estimates of fugitive emissions are significantly understated. ARID believes that actual wet stock evaporative losses range from 0.10% to 0.50% of station throughput. These values are derived from ARID's "evaporative loss model".

Response

We disagree with some of the basic assumptions which ARID uses in their evaporative loss model. For example, ARID assumes that balance systems fueling ORVR vehicles will ingest air equal to the volume dispensed and generate considerable excess emissions. ARB field tests have shown that balance stations fueling an ORVR fleet does not lead to fugitive emissions as long as pressure integrity is maintained in the underground vapor space. No change to the ARB estimate is needed.

50. Comment by San Diego

The staff report at page 40 states, "Recent audits of service station vapor recovery systems indicate 5 to 40% of the stations are out of compliance, resulting in excess emissions." This statement should be revised or deleted since as stated it is inaccurate. Recent audits of vacuum assist system collection rate failures alone were in the range of approximately 5% to 50%. The low reported value is not representative since the facilities tested in that group had been notified in advance of the audit tests. Also, that audit did not include system leakage tests. Past ARB data has shown nearly 90% non-compliance with leakage standards in the Sacramento area. More recent data collected on balance systems has also shown high vapor collection and component leakage non-compliance rates.

Response

The statement is accurate as it refers to findings of the draft ARB/CAPCOA Vapor Recovery Test Report issued in April 1999. These results pertain to assist system. We agree that the ARB tests conducted in 1995 show high failures of system leak tests. The balance system data collected in 1999 was not finalized in time to include in the staff report, as was stated on page 14. Failure rates were cited on page 40 to show the necessity for the requirements for in-station diagnostics (ISD). If failure rates are higher, as the comment infers, the necessity for ISD is further supported.

51. Comment by San Diego

The uncontrolled emission factor of 7.6 lbs/1000 gallons for vehicle refueling listed in Table VII-2 was derived using certification data. The EVR staff report does not include actual gasoline RVP and temperature data. Assuming the values would be similar to earlier certification test data, the factor is significantly below that predicted using US EPA's AP-42 predictive equation and emission levels predicted using equations from Germany and the University of Texas. This indicates ARB is underestimating the emission reductions that may accrue from EVR as well as annual residual emissions. ARB should review the District's emission estimates, analyze predictive equations available in the literature, select the best, then apply the predictive model using available field data to obtain more realistic year-round emission estimates.

Response

The 7.6 lbs/1000 gallons is based on a US EPA AP-42 value used in 1990, adjusted to the RVP standard for California Phase II reformulated gasoline (7.0 psi). This is explained on pages 91-92 of the staff report. Table VII-2 was prepared to provide a real-world check on the 7.6 value using data from past certification tests to estimate an uncontrolled summer emission factor. It is confusing because the average of the certification tests also happens to be 7.60. As stated on page 110 of the staff report, "Staff is aware of the need to use accurate emission factors and will work with interested stakeholders to continue to refine the emission factor." This includes gathering more information to derive more accurate summer and winter emission factors.

52. Comment by TRI

The uncontrolled emission factor has been changed from 8.4 to 7.6 lbs/1000 gallons based on the assumption that RVP of summertime gasoline in California has been reduced from 7.8 to 7.0 psi. A linear extrapolation, which CARB claimed it used, would make the new factor 7.6 starting from 1996 data, it should be 7.8 starting with pre-1992 data which had a factor of 10 lbs for 9 psi gasoline. Certification data taken since 1996 is used to justify the new emission factor. Unfortunately, the actual gasoline vapor pressures were not used, although this data is required as part of a certification. The data cited varies from 6.4 to 9.4 lbs/1000 gallons, a spread of 50%. It is difficult to imagine that one would want to establish a new standard on the basis of only seven such data points. Actual measurements should be taken at the vehicle tank, rather than using assumptions, to calculate an emission factor suitable for hydrocarbon inventories.

Response

The 7.6 lb/1000 gallon emission factor was calculated using the best data available at the time of the staff report. Table VII-2 was prepared to provide a real-world check on the 7.6 value using data from past certification tests to estimate an uncontrolled summer emission factor. The actual gasoline pressures from the certification tests were not measured. As stated on page 110 of the staff report, "Staff is aware of the need to use accurate emission factors and will work with interested stakeholders to continue to refine the emission factor." This includes gathering more information to derive more accurate summer and winter emission factors.

53. Comment by TRI

CARB staff is still claiming excess emissions of 6.6 tons on the basis of past A/L field testing. Our published analysis of that data shows that A/L testing should not be extrapolated and if that extrapolation is made, the 6.6 tons should be reduced by about 20%.

Response

We have reviewed TRI's analysis as published in the October 1999 issue of Petroleum Equipment and Technology. TRI believes that the data is unfairly slanted in favor of balance systems. However, at the time of the staff report, there were no excess emissions estimates from balance system inspections that occurred in fall of 1999. Thus the 6.6 tons represents a conservative lower estimate of excess emissions from in-use systems, as it does not include excess emissions from balance systems. TRI presents a data analysis of results from certification tests, but the intent was to estimate emissions from in-use systems to evaluate the emission reductions that could be realized from in-station diagnostics. That is why the results from the 2000 A/L tests conducted during the ARB-CAPCOA field studies were used in the emission estimate.

EVR Economic Impact

54. Comment by Bokides

We have to take the word of staff that we are going to get reasonable cost for things that haven't been invented yet. The cost estimates are just too weak. This is going to create a big burden on people who just spend hundreds of thousands of dollars upgrading underground tank systems. EVR is a financial black hole which is going to cost a lot of money. And it's going to allow the major oil companies to dominate even further, because you're going to eliminate independents.

Response

It is unclear which portion of the EVR economic impact analysis the commenter believes is "too weak." As shown in the ISOR, the economic impact analysis consists of a 20-page, detailed and comprehensive evaluation of the anticipated cost impacts to equipment manufacturers, gasoline-dispensing facilities (GDFs), consumers, and other agencies. This does not include 12 pages of extensive spreadsheet calculations shown in Appendix E detailing the bases and assumptions for the cost calculations.

Unlike other economic impact analyses conducted by ARB staff in the past, the EVR analysis provides a modular evaluation of the costs. This means that the EVR analysis looked at the separate impacts of the individual regulatory modules (Modules 1 through 6) as part of the overall regulatory impacts. Moreover, the staff's analysis goes beyond traditional ARB analyses in that the analysis for the EVR rulemaking also evaluates how these individual modules would impact five different classifications of GDFs by throughput (i.e., very small "mom-and-pop" operations to very large, multi-island GDFs). The analysis on impacts to different sizes of GDFs looked at both individual and cumulative impacts from the various modules.

In addition to the modular approach, staff employed a wide variety of very

conservative assumptions that tended to over-inflate the ultimate costs projected for this rulemaking. These assumptions are discussed extensively in the staff report's section on economic impacts. No comments have been received which would indicate that these assumptions are under-conservative; indeed, at least one commenter agrees that these assumptions are over-conservative and would inflate the ultimate actual costs by a significant degree. (see Footnote 24, Healy Systems, October 25, 2000)

Moreover, the analysis looks at two extreme scenarios to determine the outer bounds of impacts to businesses and consumers. At one end, the analysis evaluates the scenario in which businesses would not be able to pass on any of the costs incurred under the regulatory action. Under that scenario, our return-on-equity (ROE) analysis shows the typical impact to business profitability would be less than 2%. A 2% decrease in ROE is substantially less than the 10% threshold we have historically used as an indicator for a possible "significant" business impact. At the other extreme, our analysis looked at the scenario in which all the costs incurred are passed on to the consumers. Under that scenario, impacts to consumers would result in a retail price increase of only about \$0.0024, or about a quarter of a penny, per gallon.

In terms of up-front costs for gasoline dispensing facilities, we estimate the total one-time equipment purchase costs to range from about \$19,000 (for very small GDFs) to \$43,000 (for very large GDFs). These costs are substantially less than the hundreds of thousands of dollars spent for replacing underground storage tanks at each GDF. Nevertheless, we recognize that the costs for EVR can be significant for some sectors of the market, particularly for smaller GDFs. For this reason, and following the mandate of Health and Safety Code section 41956.1, we have designed the amendments to include a 4-year grace period for installation of EVR-certified equipment. In addition, the amendments include an exemption from the in-station diagnostics (ISD) requirement for low-throughput GDFs (i.e., those with sales up to 160,000 gallons per year). Because ISD represents about 20 percent of the total costs for the EVR regulation, the exemption for low-throughput GDFs should help mitigate the cost impacts to "mom-and-pop" facilities and help maintain their competitiveness.

Based on all of the reasons discussed above, we believe the economic impact analysis we conducted for this rulemaking provides a very robust basis for projecting the anticipated impacts on California businesses, State and local agencies, and consumers.

55. Comment by CIOMA

CIOMA believes the cost of Phase I requirements has been significantly underestimated by ARB staff. ARB has not evaluated the potential costs of major modifications which might be needed on older fill pipe configurations, which could easily go into the hundreds of thousands of dollars, since the pipes

would have to be excavated and replaced to the tank terminus – a major construction project. Typically, stations in this situation are low-volume units located in outlying rural areas. Such stations do not have the throughput to absorb huge expenses and will have to shut down. ARB should have a credible estimate of how many stations would be shut because of this requirement.

Response

The commenter did not provide any substantiation to support this claim. Our economic impact analysis projects the costs for purchasing and installing the required Phase I equipment, including drop tubes, rotatable adapters, overflow protection, and spill containers. (e.g., see "Estimated Equipment Costs for a Model GDF 1 Facility per Proposed Module," Appendix E, Staff Report) We included cost estimates for these and all other required equipment under our proposal for GDFs ranging from very low-throughput to very-high throughput, which includes the rural stations noted in the commenter's letter. Thus, our analysis already accounts for situations involving low-throughput stations.

If a rural, low-throughput GDF encounters unanticipated or unusual costs, the districts have sufficient flexibility to mitigate such impacts. For example, the regulation provides flexibility in the application of the EVR requirements. Thus, districts might decide for policy reasons to exempt such low-throughput, rural GDFs from some of the EVR requirements. Also, the districts have variance provisions under which a GDF operator can apply for a limited-term variance from the EVR requirements to accommodate unexpected conditions. For these reasons, we believe that situations involving low-throughput GDFs that were not anticipated in the EVR economic impact analysis can be adequately addressed under the current proposal.

Although we believe we have adequately anticipated the economic impacts to GDFs throughout the State, we will work with CIOMA and others to determine the actual number of small GDFs in the situation described in this comment. If we determine that a significant number of GDFs will have unanticipated impacts, we will work with the affected stakeholders to determine what reasonable and feasible steps, beyond those already incorporated in the EVR rulemaking, can be taken to mitigate the impacts to those GDFs.

56. Comment by CIOMA

CIOMA believes that an entire area of in-station diagnostics costs has not been included in the ARB cost analysis. CIOMA claims that ARB representatives indicated that they had no idea of the costs related to the operation, recordkeeping and reporting from these systems, since local districts will impose those requirements. In addition, there has been much discussion of how these systems might be designed to shut down a station if problems are detected. Once again, ARB staff indicates that they will not be the ones who dictate the operational parameters for shutdown; local districts will.

This is a hidden, and potentially very significant, cost of these regulations. These costs must be estimated and included in the cost-effectiveness measurements of that analysis will be invalid. Costs of station shutdown while waiting for a district inspector to allow restart could be fatal to a small station.

Response

We disagree with the commenter's claim that ISD will result in a significant increase in shutdown costs. There should be no increase in shutdown costs relative to the current program, because ISD will simply force the equipment repairs and shutdowns that would have occurred had there been constant (i.e., 24 hours per day) district supervision at each gas station. This is discussed more fully below.

Under the existing vapor recovery program, defective pumps, dispensers, and other equipment must be taken out of service and repaired when found to be noncompliant with vapor recovery regulations. Thus, the current program already results in equipment shutdown costs when defective equipment is found. Unfortunately, as noted in the ISOR (pg. 66), many defects may go undetected for months or even years under the current program. Had these defects been found in real-time (i.e., as they occurred), they would have resulted in equipment or facility shutdowns and the commensurate costs.

In contrast to the existing program's reliance on periodic manual inspections, an ISD system will function as if a real-time inspector was constantly at the gas station. The ISD system will continuously monitor the EVR systems and, when defective equipment or conditions are detected, will institute a series of progressive alarms that serve as an early-warning system for the station operator. The ISD provision is intended to require equipment or facility shutdowns only after a progression of increasing alarms is ignored. In other words, the ISD provision first requires early warning alarms to notify the GDF operator that the defective equipment or condition needs to be addressed. The alarms will progress to indicate that a shutdown is imminent if the problem is not addressed. If the operator continues to ignore the ISD warnings, then a shutdown will automatically occur and will remain in effect until the problem is fixed and the inspection justifies reactivation. (see "In-Station Diagnostics" responses in this FSOR and pp.65-68 of the ISOR for additional discussions of the ISD proposal)

Thus, ISD should result in the same number of equipment and facility shutdowns that would have occurred had there been a district inspector at each GDF 24 hours a day. In other words, a noncompliant GDF will see an increase in shutdown costs relative to its current situation only because the GDF was not paying for its noncompliance under the existing program until the defects were found, which in many cases could be months or even years between

inspections. By the same token, a compliant GDF operator who conducts timely repairs to his equipment under the EVR program should see little or no change to compliance costs relative to the existing program because the ISD-induced shutdowns will not occur if timely repairs are made.

Indeed, it is entirely possible that, for some facilities, shutdown costs will be avoided altogether or will be substantially reduced under the EVR program. This is because, for those facilities that follow the ISD alarms and judiciously perform the needed repairs, an ISD-imposed shutdown can be avoided entirely. Thus, ISD can reduce the shutdown costs for some facilities relative to the current program, in which equipment would need to be taken out of service when noncompliance is detected. With ISD, the operator can avoid a shutdown by acting upon the ISD system's warning of impending shutdown.

57. Comment by CSSARA

CSSARA is very concerned with the way cost estimates to both consumers and a small business have been addressed, and notes that a quarter of a billion dollars will be needed from retailers and customers to implement the program. Petroleum retail outlets in the state have dropped from 15,000 in the 1970s to 7200 today. The demise of these small businesses is due to oil company marketing philosophies and state regulations which consolidate the industry. Service station dealers have many fees, and have lost as much as 6 cents/gallon since the beginning of the year in operating costs. Hundreds of thousands of dollars are being spent to address MTBE issues. CSSARA suggests an upfront tax/gallon to generate a fund to help low-throughput stations comply with new requirements and stay competitive.

Response

The commenter provides no clear indication of what his concern is with "the way cost estimates to both consumers and small businesses have been addressed." We are therefore unable to address whatever deficiency he believes the cost analysis may have. As we noted in earlier responses, we believe the Staff Report provides a very robust basis for our economic impact analysis.

With regard to the suggestion for a gasoline tax, the ARB does not have the statutory authority to impose such a tax. Such authority must either be implemented by the Legislature or be delegated to the ARB (via the Governor's Office) by the Legislature. Either way, because such authority has not been granted to the ARB, we are unable to enact the commenter's suggestion. However, there is some merit to his suggestion. We are therefore exploring the pros and cons of such a tax and how the required authority would be obtained.

58. Comment by Data Action

The EPA 1991 study is obviously outdated and will grossly understate the number of hoses per dispenser today because it did not account for the 90's

popularity of the multihose dispenser. The "Input Values Used in the Cost Analysis" should be updated because the average number of nozzles per GDF has increased dramatically since 1991. The unihose dispenser (except for a few blenders) was not legal in the USA until 1993 when the National Conference on Weights and Measures voted to make it legal. From an analysis of 1999 sales figures, Data Action estimates that 60% of new dispensers have 2 or 3 gasoline hoses per side while only 40% are unihose.

Response

The commenter is correct in that the number of nozzles per station has increased dramatically since the 1991 EPA Technical Guidance was published. However, the commenter misinterprets Table VI-3, "Selected Input Values for Each Model GDF Class." Contrary to the commenter's assertion, Table VI-3 updates the 1991 EPA values by using the updated GDF population distribution shown in Appendix E. From Appendix E, we project that Model GDF Classes 1-5 comprise 4.7%, 14.1%, 45.7%, 31.3%, and 4.2% of the total GDF population in California, respectively. Using these figures, we estimate the weighted-average number of nozzles per GDF has increased from about 5.6 in 1991 to 7.3 in 1999, an increase of about 30%. Thus, our input values and the resulting analysis already account for the significant increase in nozzles per GDF.

59. Comment by Incon

We have worked with CARB to fine tune estimates regarding the cost impact of deploying an ISD solution at fuel dispensing sites. Our view is that the costs associated with these new systems will not be dissimilar to the costs associated with current UST leak detection and monitoring systems. Furthermore, we believe that the evolution and integration of technology over time will reduce the overall cost to the site operator, in a way not dissimilar to what has happened in the Automatic Tank Gauge market. Therefore, we believe that CARB's role in encouraging the evolution of technology is critical to the long-term success of this program.

Response

We agree.

60. Comment by PG&E

Recent Bay Area tunnel studies suggest that gasoline evaporation may be responsible for almost a third of the hydrocarbons in the air on peak ozone days. Page 87 of the staff report suggests that evaporative emissions from gasoline stations could be reduced at costs from \$0.63 to \$12.49 per pound of VOC emissions avoided – with the highest costs occurring at stations with the lowest throughputs (those dispensing 13,233 gallons/months). By comparison; the statewide median VOC offset price in 1998 was \$3.84/lb; and the most costly VOC control measure in the 1999 BAAQMD's Clean Air Act Attainment Plan was \$5.70 per pound. These numbers suggest that the fastest possible control of the

higher throughput stations is justified and ought to proceed. They also suggest that similar control of some of the lower throughput stations is not as justifiable, and that reasonable staggering of compliance deadlines for the smaller throughput stations is justified.

Response

We agree that, based on our analyses, it is reasonable to tailor the compliance dates and regulatory requirements to get emission reductions in the most cost-effective and timely manner as feasible. Thus, our proposal staggers the operative dates for compliance with the various modules. In addition, our proposal will exempt the lowest-throughput GDFs from the ISD requirements at this time. Furthermore, we have modified the proposal so that the unihose requirement applies only to new GDFs or GDFs undergoing substantial modification.

61. Comment by Tosco

The economic analysis from implementation of EVR over the four-year grace period was not accurate as it did not include multihose to unihose dispenser conversion, equipment installation, lost revenues during station downtime, increased maintenance costs, handpumps on all delivery trucks, costs associated with additional compliance testing, costs of disposal of liquid removed from spill boxes at vapor connectors, and vacuum equipment required to maintain a negative tank pressure. Preliminary analysis indicates a cost approximately twice that prepared by CARB. An updated cost analysis, which included the multihose to unihose conversion, should be produced. Tosco is willing to assist CARB in obtaining these additional costs to achieve a more accurate economic analysis.

Response

We disagree; based on the very conservative assumptions used in our analysis, we believe that our calculations overestimate the actual costs and are sufficiently accurate to provide a robust basis for the EVR rulemaking. Our beliefs are based on several reasons. First, the staff's modified proposal makes the unihose requirement applicable only to new GDFs or GDFs undergoing substantial modifications. Thus, the retrofit cost for most GDFs to install unihose equipment will either be negligible (for new GDFs) or comparable to installing new multihose equipment (for GDFs undergoing substantial modification, including complete replacement of dispenser and hose equipment).

Second, the commenter incorrectly states that installation costs were not included in the analysis. As shown in Appendix E, the installation cost for each of the six modules was incorporated into the analysis of costs for each of the five model GDF facilities. For example, in "Estimated Equipment Cost for a Model GDF 3 Facility per Proposed Module," the installation costs incorporated into the analysis include \$80 per rotatable adapter (Module 1), \$1400 average for

installing a vapor processor (Module 2), \$160 per ORVR compatibility unit (Module 3), and \$1280 per ISD installation (Module 6). The analysis for each of the other four model GDF facilities contains similar estimates of installation costs for each the modules. Installation costs for Modules 4 and 5 were assumed to be included in the installation costs for Module 3 since all three of these modules are considered to overlap in design and equipment.

Third, the purchase costs for vacuum pumps needed for negative pressure processors were similarly included in the analysis, contrary to the commenter's suggestion. These are clearly shown under "Auxiliary items (incl. P/V, collection & processor" in the spreadsheet calculation for each model GDF facility. For example, in "Estimated Equipment Costs for a Model GDF 3 Facility per Proposed Module," the estimated cost for the vapor processor equipment including vacuum pump (as part of the "collection" system) is shown as \$7500 for a Type 1 Assist system and \$9000 for a Type 2 Assist system.

Fourth, the commenter incorrectly states that costs for increased maintenance, downtime, and compliance costs should have been included in the analysis. This suggestion is based on the false premise that the EVR requirements will increase the frequency or severity of maintenance, downtime, and compliance testing. On the contrary, the EVR requirements are, by definition, enhancements to current vapor recovery requirements. In other words, the EVR requirements are designed to permit only equipment that is more robust and less prone to failure than currently-available equipment. In addition, the ISD requirements will encourage GDF operators to increase their self-compliance efforts by taking advantage of the "early-warning" features of ISD alarms to take corrective measures before a shutdown becomes imminent. Thus, when fully implemented, the EVR requirements should result in less maintenance, less frequent compliance testing, and less downtime than under the existing program. Because of this, we would expect a reduction or, at most, little or no change in these costs over the long run.

Finally, the commenter is correct in that the incremental added cost of equipping a tanker truck or GDF facility (which is not required by the regulation) and the cost of disposing of gasoline in the fill tube spill container have not been explicitly accounted for in the analysis. There are several reasons why we did not include these costs. First, disposal costs of gasoline in the overflow container is not relevant to cost estimates for this rulemaking since the EVR proposal does not require disposal of that gasoline. The current program permits GDF operators to place gasoline left in the overflow container back into the underground storage tank (UST) by releasing the drain valve in the container. Because this drain valve represents an emissions source when it is defective or inoperative, the EVR program requires elimination of the drain valve. However, the EVR program would still permit GDF operators to place the gasoline in the overflow container back into the UST. The only difference from

the current program is that, rather than using a drain valve to transfer the spilled gasoline back into the UST, GDF operators would now be required to hand pump the gasoline from the container and into the UST. Thus, we do not expect GDF operators to incur disposal costs for gasoline spilled into the overflow containers.

With regard to hand pumps, inclusion of this cost would have a negligible effect on our conclusions because the other equipment costs we identified were substantially greater than this cost. To illustrate, hand pump costs range from about \$5, for simple portable models, to about \$30 for stationary models. Excluding hand pumps, the total one-time equipment purchase costs we projected range from about \$19,000, for low-throughput GDFs, to about \$43,000 for very high-throughput GDFs. Thus, the impact on our cost estimates by including hand pumps would range from about 0.03% (for a \$5 portable pump at a very low-throughput, Model GDF 1 facility) to about 0.2% (for three \$30 stationary hand pumps, one at each fill tube's overflow container, at a very high-throughput Model GDF 5 facility). Similarly, we expect the cost of purchasing a portable hand pump for use with a tanker truck would have a negligible impact on the costs of operating that truck. Clearly, inclusion of such costs on our cost estimates would have no effect on our conclusion that the EVR program is cost-effective, particularly given that our analysis already significantly over-estimates the actual costs for this rulemaking (see Footnote 24, Healy Systems, October 25, 2000).

62. Comment by Tosco

The addition of some test procedures as periodic compliance tests could potentially cause large economic impacts to fueling stations that should be considered in the economic analysis.

Response

We disagree. The entire EVR rulemaking is designed to significantly reduce emissions and compliance problems. EVR-certified equipment will be more durable, have tighter tolerances, and be more robust than currently available equipment. The ISD provision will ensure that, in the long term, fewer episodes of operating in noncompliance will occur because of the early-warning requirements. Although there may be some increase in compliance testing in the short term while equipment suppliers and GDF operators become acclimated to the EVR requirements (the "learning curve"), the overall reduction in compliance problems under the EVR program in the long run should reduce the total cost of compliance for GDFs throughout the State.

63. Comment by Tosco

The proposed requirement for a ¼" per foot fall on the vapor return piping will significantly add to the cost of installation of fueling systems due to the fact that depth of trenching and tank burial will increase. The proposed requirement of

using 3" vapor return piping will minimize the occurrence of blockage without the additional costs of increased burial depth.

Response

We disagree for two reasons. First, the ¼" slope requirement is not a retrofit requirement; it applies only to new installations. More importantly, the slope requirement is merely a codification of the current requirement for a ¼" slope already contained in existing Executive Orders approving vapor recovery installations. Thus, because the pre-EVR Executive Orders currently require a ¼" slope, there should be no increase in burial and installation costs relative to existing costs.

Aboveground Storage Tanks

64. Comment by Containment

EVR proposal does not reference aboveground tanks and systems. Many small businesses, governments and fire departments use small aboveground storage tanks for gasoline fueling. There are thousands of small storage tanks used for these purposes. The cost of upgrading the existing and proposed AST systems does not seem to be addressed in the staff report. This cost should be examined prior to requiring aboveground tank owners to upgrade their systems.

65. Comment by ConVault

There are quite a number of aboveground tanks at non-retail facilities such as marinas, golf courses, fire stations, city and state governments that have vapor recovery. These facilities have such low throughput that the EVR costs could be onerous. Maybe an exemption could be considered.

Response

Aboveground tanks are certified under a separate procedure, CP-205, Certification Procedure for Vapor Recovery Systems of Novel Facilities. However, the certification Executive Orders for aboveground tanks reference Phase I and Phase II vapor recovery equipment that was certified under CP-201. Thus, EVR requirements may indirectly affect aboveground tank certifications. As stated at the Board meeting, staff will work with the aboveground tank manufacturers to determine the effect of the EVR requirements on their system certifications. When EVR certified components are available and are compatible with aboveground tank systems, those components may be used. Where EVR components are not compatible with aboveground tank systems, CP-201 section 19 will allow continued use of non-EVR certified components.

66. Comment by Containment

The proposed pressure ranges developed for underground storage tanks may not be achievable by aboveground tanks due to thermal cycling. A different pressure range may be needed for AST systems with in-station diagnostics.

Response

As stated in the previous response, aboveground tanks are certified under CP-205. Section 3.1 of CP-205 states that “each application shall be evaluated by the Executive Officer to determine which of the requirements of CP-201 §3, CP-202 §3, CP-203 §3, and CP-204 §3 shall apply.” Thus, different criteria for storage tank pressures may be used for aboveground tanks.

67. Comment by ConVault

Emissions that occur from expansion and contraction of the fuel in small aboveground steel tanks do not appear to be addressed. By merely installing a pressure/vacuum valve on these tanks, you can save a ton of emissions a year and you are talking about a \$60 item at most.

Response

The installation of a P/V valve will likely be required for future certifications.

68. Comment by EcoVault

Ecovault believes it was not the intent of the EVR proposal to impact aboveground tanks, but still wants to be involved in the process. Ecovault found out about the EVR proposal two weeks before the hearing, but doesn't think staff intentionally omitted notice. Ecovault would like to work with staff on Modules 1 and 2 and how these modules will affect aboveground tanks.

Response

EVR does affect aboveground tanks because current aboveground tank certification executive orders directly reference Phase I and Phase II systems which have been certified for underground storage tanks. However, because aboveground systems are certified under CP-205, rather than CP-201, EVR requirements do not directly apply to aboveground tanks. Staff will work with Ecovault and other aboveground tank manufacturers to address EVR issues specific to aboveground tanks.

Unihose Requirement

69. Comment by BPAmoco

BPAmoco disagrees with the proposal that there “shall be only one hose and nozzle per side of a multi-product dispenser (MPD). This requirement would apply to all new retail sites and to existing MPDs after 2005. We ask CARB to allow multiple hoses per multiproduct dispenser for the following reasons:

1. Multiple hoses are needed to sell two special, non-fungible products without adulteration by midgrade or regular brands. The first product is a differentiated premium gasoline.
2. Multiple hoses are needed to sell a lower sulfur premium grade earlier than

required as part of our clean fuels effort in many ozone nonattainment cities (Atlanta, Chicago, Milwaukee and Detroit). Single hoses would increase the sulfur level and reduce the benefits to cleaner air for consumers purchasing low sulfur premium.

3. Consumer research has shown that consumers overwhelmingly oppose single hose MPDs at retail sites. They do not trust gasoline delivered from a single hose.
4. If one nozzle becomes disabled, there remain two other functioning nozzles at the pump island.
5. In principle, petroleum marketers should decide what equipment to use. CARB can set pollution related objectives and emissions levels, and the petroleum industry should have the flexibility to choose what equipment will meet these goals.

Response

There is some confusion about the requirement for unihose dispensers, including the belief that it requires modification of all MPD after 2005. In fact, the unihose requirement applies only to new or otherwise modified dispensers. The language in Section 4.11 of CP-201 has been modified to clarify this requirement. The modified section reads as follows:

There shall be only one hose and nozzle for dispensing gasoline on each side of a multi-product dispenser (MPD). This shall not apply to facilities installed prior to the effective date of this procedure unless the facility replaces more than 50 percent of the dispensers or makes a modification, other than the installation of required sensors, that modifies over 50 percent of the vapor piping in the dispensers. Exception: dispensers which must be replaced due to damage resulting from an accident or vandalism may be replaced with the previously installed type of dispenser.

The unihose MPD requirement was adopted to minimize the emissions caused by leaks in the vapor path by reducing the number of potential leak sources. CARB has found that leaks in the vapor path of one hose and nozzle can reduce the effectiveness of other nozzles at the same fueling point even when the leaking nozzle is not in use. In addition, air ingested through the idle nozzle causes vapor growth in the storage tank and additional excess emissions. An applicant who is able to demonstrate that multiple nozzles at a fueling point will not, in the event of a component failure, cause emissions that exceed those from the unihose configuration may apply for certification as an innovative system.

70. Comment by CSSARA

Reducing the number of nozzles is good for emissions, but is there another way you can do it where you don't in some cases shut down 50% of the station's pumpability. If we had a good, proven retrofit program and good tests on nozzles we can we avoid the debacle that we did with the old vapor recovery nozzles.

Response

Please see response to comment #69.

71. Comment by Chevron

The proposed unihose requirement is in potential conflict with the Federal Trade Commission's "Octane Rule" (16 CFR part 306) that prohibits the sale of gasoline of a lower octane than the level posted on the dispenser. The potential conflict occurs when a customer chooses to refuel with a higher octane gasoline grade after the previous refueling with a lower grade product. In this scenario, the volume of gasoline in the line between the product selection valve inside the dispenser and the dispensing nozzle could have a lower octane level than the product chosen for delivery. Chevron has chooses to use multi-hose dispensers at their investment stations to ensure compliance with the Octane rule and enhance customer confidence that they are truly receiving the grade of gasoline selected. ARB should not limit commercially viable and presently certified equipment configurations that are widely used throughout the state that allow operators to meet federal fuel quality requirements. Rather than prohibit multi-hose dispensers, Chevron suggests reducing emissions through improved performance standards, which staff has done in several cases in EVR. Chevron requests removal of the unihose requirement.

Response

We disagree; there is no reasonable basis for concluding that the unihose requirement will result in reduced nozzle sales, higher nozzle prices, or the creation of a nozzle monopoly. Unihose nozzles are fundamentally the same as the nozzles used in multi-nozzle dispensers. The main difference occurs not at the nozzle, but within the dispenser. In multi-hose dispensers, each hose/nozzle has its own dedicated piping; in some cases, the mid-grade gasoline is made by mixing gasoline from the regular and premium grade piping through a manifold. By contrast, unihose nozzles are fed by a common mixing manifold through which regular and premium grade gasoline flow in a controlled manner. Because there are no major inherent differences between the nozzles themselves, unihose or otherwise, we would not expect the cost of manufacturing unihose nozzles to be significantly different from that of nozzles used in multi-hose dispensers. Consequently, we do not have any reasonable basis for concluding that nozzle prices will increase.

Similarly, the unihose requirement should not decrease nozzle sales. While each dispenser subject to the unihose requirement would only have one nozzle per side, the total number of unihose nozzles that are required for replacement in a given time period should be the same as with a multi-hose dispenser. This is because unihose nozzles will be used more often than any single nozzle in a multi-hose dispenser. Thus, the sales of unihose nozzles should not significantly differ than the sale of nozzles under the current program.

Because the total number of nozzles under the unihose requirement should be essentially the same as the number of nozzles sold under the current program, we would not expect the market positions of nozzle manufacturers to substantially change. Thus, while there may be some shifting in the market as manufacturers determine which nozzle models are best suited for their particular niches, we can find no rational and reasonable basis for concluding that the nozzle market will drastically change and result in the creation of a monopoly or monopolies.

With regard to the cost estimate for the unihose requirement, we incorporated these costs into our analysis of nozzle costs. As stated earlier, the unihose requirement will apply only to new installations or substantially modified dispensers. Because of this, we assumed that the cost of installing a new 2-pack (i.e., 1 unihose on each side of a dispenser) would be no greater than the cost of installing a new 6-pack (i.e., 3 nozzles on each side of dispenser). We received no comments indicating that this assumption is invalid.

72. Comment by Data Action

Page 58 of the Executive Summary, Section F describes the unihose requirement. Data Action did not see the cost estimate for doing this in the cost data. The use of unihose or multihose is presently a marketing decision. Many customers do not trust that they are getting the grade of gasoline they selected when there is only one hose to deliver the product. The unihose requirement has the potential to create a monopoly in the nozzle business and cause higher nozzle prices. Smaller nozzle companies would drop out of business as nozzle sales would drop to less than half of today's sales. Data Action requests that the unihose requirement be removed.

Response

Please see response to comment #69.

73. Comment by TRI

A past proposal for single hoses and nozzles per fueling location was eliminated some time ago. It reappeared in the February 4, 2000 staff report. The current proposal calls for all multi-hose dispensers to be converted to single hose after the 4-year grandfather period. CARB needs to revisit this issue. Multi-hose dispensers are installed primarily as a result of customer demand, customers who feel they are cheated when paying for premium products dispensed through a single hose along with lesser products.

Response

Please see response to comment #69.

74. Comment by Tokheim

There are many customers that will not use the unihose construction because of consumer perception. This requirement is feature and technology limiting. If a system (unihose or multihose) meets all other requirements, it should be a certifiable system.

Response

Please see response to comment #69.

75. Comment by Tosco

Tosco operates 1100 sites in California, about 20% of which use the multihose dispenser configuration. If this percentage is representative, about 2,250 sites of the 11,250 sites in California will require modification to a unihose configuration. The proposed system efficiency increase from 90% to 95% and improvements required for nozzle operations will address issues with emissions from hanging hardware. The reduced number of hoses will not help to reduce spillage emissions as the criterion is based on pounds per gallon dispensed. Tosco suggests that unihose dispensers be made a requirement for new stations and that no modifications be required to existing multi-hose dispensers that meet proposed efficiency and nozzle requirements.

Response

Please see response to comment #69. With regard to spillage, these emissions are not the only ones affected by the number of nozzles. Idle nozzle emissions due to liquid retain, and pressure-related fugitive emissions resulting from air ingestion while another nozzle is in use, are affected by the number of nozzles per fueling point. As noted above, an innovative system that ensures that these emissions will not occur may be certified.

76. Comment by VST

Requiring all systems to convert to a unihose dispenser could single [sic] be responsible for the largest element in the cost associated with meeting EVR requirements. If a vapor recovery system demonstrates during certification testing that it functions with multi-hose dispensers, and the ISD ensures that the system will continue to function in any installation, there should be no detrimental effects to allowing multi-hose dispensers. This could reduce the cost of installing a functioning EVR system substantially with no increase in emissions, particularly for systems that operate at continuous negative pressure.

Response

Please see response to comment #69.

77. Comment by Wayne

The requirement to convert multihose dispensers in the field to single hose operation in the next four years would be a large burden on the station owners that have multihose dispensers. This cost could be large as the electronic

computers of the older pump populations, for example, do not support single hose applications and thus the station owners must replace the electronic computer as well as the piping.

Response

Please see response to comment #69.

In-Station Diagnostics (ISD)

78. Comment by ARCO

ARCO questions the fundamental need for ISD at stations equipped with balance vapor recovery systems. ARCO understands that CARB decided to extend many of its vacuum-assist system enhancements to balanced systems after vacuum-assist manufacturers complained that they were being placed at an economic disadvantage. ARCO states that the primary function of ISD for balance systems is to measure underground storage tank (UST) pressure and ARCO believes that balance systems generally meet the UST pressure profiles as proposed in the CARB EVR report. ARCO proposes to work with CARB to expand pressure monitoring at several balance stations. This data could be presented at the 2002 EVR technology review to demonstrate that ISD is not reasonable, necessary, or cost-effective for balanced systems.

Response

We have always maintained that ISD is needed for all types of vapor recovery systems to identify failure modes. It was easier to define measurement of failure modes for assist systems, so discussion of ISD at balance systems was not presented in the early EVR workshops. The primary function of ISD is not to measure UST pressure, but to identify and notify the operator when the vapor recovery system is not operating properly. UST pressure is just one indicator of system operation. The UST pressure data collected at an ARCO station that was presented at the Board meeting showed that the station did not initially meet the UST pressure limits and was only able to be in compliance after equipment upgrades were made to get the system leak-tight. However, we expect more data to be collected and we will certainly consider all data at the 2002 Technology Review to assess the appropriateness of ISD for balance systems.

79. Comment by ARCO

ARCO questions requiring higher-volume gasoline stations, as typically operated by ARCO and their independent dealers, to install ISD before other types of stations. ARCO understands that CARB was attempting to address small business concerns by delaying implementation for lower-volume stations. However, other major oil companies – ARCO's competition – frequently operate these lower-volume stations. We would recommend that CARB consider giving every station more time, or at least focusing exemptions on small business.

Response

The ISD implementation schedule has been modified from five throughput groupings to three, thus reducing the emphasis on the highest throughput stations having the earliest implementation. We have exempted the lowest throughput group (<160,000 gallons/year) from ISD requirements.

80. Comment by ARID

ISD requirements should be expanded to include the use of temperature corrected inventory reconciliation to verify the magnitude of wet stock evaporative losses and the associated overall vapor recovery performance of the system installed at a given dispensing facility. For typical California RFG blends, a 10 F rise in gasoline temperature will result in a 0.7% volume increase in the gasoline. Thus, if the temperature of a given volume of gasoline increases by 5 F from the storage tank to the dispenser due to heat gain from the submersible pump, associated piping and surrounding earth, the volume expansion of gasoline measures 0.35%. Introducing such an error into inventory reconciliation algorithms that do not incorporate temperature correction at the dispenser meter renders existing leak test protocols useless and does not allow a petroleum marketer to quantify existing liquid leaks or evaporative losses.

Response

The comment refers to inventory reconciliation algorithms and leak detection protocols in the underground storage tank liquid leak detection program administered by the State Water Resources Control Board (SWRCB). This is outside the scope of ISD, which is intended to monitor the performance of the vapor recovery system. However, ARB staff is working with ISD vendors and the SWRCB staff to consolidate required gasoline dispensing facility monitoring where appropriate. If temperature measurement is deemed necessary to accurately monitor vapor recovery system operation, the certification of the ISD system will include temperature monitoring.

81. Comment by Bokides

In-station diagnostics are not the panacea to system problems. In-tank monitors have led to incredible disasters with failures in technologies, forcing stations to shutdown. There are still systems that don't work out there. Where are the repair people going to come from? Where is this technology going to come from? Who is going to develop it? And when it gets out to my level where I have to put the money out and put it in my station, and it fails, who picks up the tab? I do.

ISD is presented as non-intrusive and not having to go underground. I don't know how you install an ISD system without going underground.

Response

The phased-in ISD implementation date is deferred for three years to allow for

ISD technology development. The Board directed staff in Resolution 00-9 to work with CAPCOA and WSPA to develop an ISD pilot program at test stations in several metropolitan areas for evaluation and monitoring. The pilot program will provide a basis for assessing testing frequency requirements and to provide information for the technology review in 2002.

We anticipate that most, if not all, ISD installations will “piggyback” on existing leak monitoring systems installed as part of the recent Underground Storage Tank (UST) replacement program required by SWRCB. Thus, we do not expect a significant amount of trenching to be required to install ISD systems. The cost for installing ISD systems, including underground pressure sensors and Air-to-Liquid (A/L) ratio sensors, has already been accounted for in our cost estimates (see, for example, “Module 6 (In-Station Diagnostics) Installation Costs,” in “Estimated Equipment Costs for a Model GDF 2 Facility per Proposed Module,” Appendix E, Staff Report). In addition, the application of wireless communication between the monitoring sensors and the dataloggers will be explored during ISD development.

82. Comment by CAPCOA

ISD data needed by districts includes: easy to read displays and printouts/alarms for station operators and inspectors, log of calibrations and I&M program on sensor alarm systems, exceptions reports, phone modem tie-ins, 95% availability, and dispenser throughputs. CAPCOA requests that major gasoline marketers be required to provide implementation plans and annual reports on ISD systems.

Response

Additional details on in-station diagnostics requirements have been provided in modifications to CP-201 in an ISD Appendix. These include requirements for printouts/alarms, calibrations, remote access of ISD data, and 95% availability. We will address CAPCOA’s remaining comments during the ISD pilot program and technology review process.

83. Comment by CAPCOA

CAPCOA suggests the following to handle ISD system failures. Major failures should lead to system (sub-system) shutdown and should be handled as a breakdown requiring a variance if continued non-compliant operation is justified. Brief periods of marginal non-compliance should be allowed while repairs are made. Special consideration should be granted for remote (rural) districts where repairs cannot always be made overnight and shutdowns may have substantial local impacts.

Response

The ISD system shall shut down fueling to the affected fueling points when the ISD system assesses a vapor recovery system failure. The ISD system shall

include a reset capability to allow continued dispensing, if allowed by the district, until necessary maintenance is performed. The ISD system shall electronically record the reset event. Each District shall specify the timeliness of investigating and repairing the assessed vapor recovery system failure.

84. Comment by CAPCOA

CAPCOA suggests the following regarding ISD system operation. The ISD should be designed to prevent tampering and maintenance by non-authorized/certified persons. CARB should review other agency monitoring requirements. For example, the Hazardous Material Department requires the UST leak monitor to be checked every year and maintained by certified contractors. A/L monitors should be tested at least monthly. Easy calibration checks should be built into sensors, for example, piping to allow gas flow rate checks. Standardized screening tests should be required for all systems of similar type. Sensors should be readily accessible for testing and repair. Inspectors should be able to use their PCs to electronically check settings and calibrations. Systems should have built-in calibration sequences that record major corrections needed to bring system back into calibration to find systematic or progressive defects.

Response

ISD systems shall be designed to be tamperproof as specified in section 5 of the CP-201 Appendix. Sensors shall have features to allow field testing and repair. Section 1.7 of the CP-201 Appendix specifies that each ISD system include self-testing of the system and sensors, which will be verified during the certification process.

85. Comment by CAPCOA

CAPCOA recommends a longer implementation schedule for ISD. Start with large stations (> 300,000 gal/month) and give them a full year to work the kinks out of the technology and allows time for districts to train inspectors. Bring remaining stations in over a two to four-year period beyond the large ones.

Response

The ISD implementation schedule has been revised to allow for staged implementation by station throughput as suggested. ISD requirements will begin for large stations (> 1.8 million gallons/yr) in 2003 and for mid-size stations (> 160,000 gallons/yr) in 2004. Existing stations will have up to four years after the ISD effective dates to meet the ISD requirements.

86. Comment by CAPCOA

Proper training and certification of testers, repairers, installers and rebuilders are critical to success of ISD and EVR. CARB needs to take the lead to ensure statewide consistency and accountability, and districts do not have resources to do themselves. Equipment manufacturers could do the installation and repair

training. CARB should insist that manufacturers provide inexpensive, self-taught materials for most activities (e.g., interactive software or videotaped classes. Training via EPA's video broadcast system should be considered.

Response

We agree that proper training and certification of contractors who will install, maintain and repair ISD systems is essential. The certification and training requirements are included in CP-201. The training materials will be evaluated during the certification process. We are working with the State Water Resources Control Board to develop a certification process for contractors that will work on both vapor recovery and UST leak monitoring systems.

87. Comment by CAPCOA

Detailed I&M guidance should be required as part of the certification process. The adequacy of the I&M program should be evaluated before the limited term certification is renewed.

Response

We agree. ISD system applicants will be required to submit I&M documentation with their certification application.

88. Comment by CAPCOA

ISD manufacturers should be required to keep statistical records of "new systems" and replacement part sales in order to spot equipment problems and determine replacement frequencies. Manufacturers should be required to submit biannual reports on component failures and replacement frequencies, as well as its proposed corrective actions.

Response

We expect that ISD manufacturers will develop this information as part of their business practice. If districts become aware of a system deficiency, ARB will work with the districts to resolve the problem with the ISD manufacturer. Data on component failures, replacement frequencies and corrective actions will be requested during the certification renewal process if deficiencies have been documented.

89. Comment by CAPCOA

Enforcement actions for ISD failures should be clearly defined and included in the Executive Orders with periodic updates of Title 17.

Response

We agree in part. ARB identifies title 17 defects both in specific Executive Orders and through periodic updates to title 17, CCR, section 94006. ISD failures will likely be less than substantial defects because an ISD failure will not result in emissions absent the failure(s) of some other component(s) of the vapor

recovery system. See Health and Safety Code section 41960.2. No change made.

90. Comment by CAPCOA

To the maximum extent feasible, CARB should require ISD sensors to provide feedback to EVR so as to maintain vapor recovery system effectiveness.

Response

We disagree that feedback from the ISD system to the vapor recovery system operation be a requirement. The objective of ISD is to monitor system operation and alert the operator when failures occur. The ISD system is not responsible for performing corrective action.

91. Comment by EBW

ISD systems should be certified as “non-system components” under CP-201. The ISD system is strictly a monitor and does not enhance the performance of the vapor recovery system. Page 42 of the ISOR states that staff supports integration of the vapor recovery in-station diagnostics with UST leak detection systems where possible.” The proposal to certify ISD for each vapor recovery system would severely impact the market for ISD. EBW’s market would no longer be the end user, but rather the system builder. In more than one case, these builders are working on similar projects and have no reason to consider our offering. Since these system builders are not owners of UST leak detection devices, it is highly likely that the ISD offered would not be an enhanced tank monitoring device. A restricted ISD market will result in major cost increases of equipment (as there will be fewer certified systems), less ISD options and less technological enhancements.

Response

Section 16 of modified CP-201 provides for certification of non-system-specific components. At this time, ISD systems are not specifically identified as system-specific or non-system-specific components. As stated in section 16.3, any component shall be presumed to be system-specific unless the Executive Officer determines that the component may be considered non-system specific. Although staff is sensitive to the cost of certifying an ISD system on several vapor recovery systems, it is important that sufficient testing be conducted to prove that an ISD system will perform successfully on different system types. Section 16.3 does allow the future designation of an ISD system as a non-system-specific component if convincing evidence demonstrates that the ISD system can meet the properties of section 16.1. Section 16.1 provides that non-system-specific components do not directly affect the performance of the system and can be defined by performance specifications.

92. Comment by Glenn County

The low-throughput exemption for ISD should be increased from 13,000 gallons

per month to 40,000 gallons per month and a comprehensive enhanced inspection and maintenance program put in its place. Although the ISD compliance date has been pushed back an additional four years for the very low throughput stations, you still have several stations in the 13,000 to 40,000 gallon per month range that may just stay in business another four years before reaching the point of not being profitable and have to close their doors. The regulations coming down from the Water Board and ARB are very tough on some of these small stations from a financial and regulatory aspect. If stations close in remote areas, motorists will opt for personal small tanks that may result in more environmental impact. The 40,000 gallon per month limit is consistent with the benzene ATCM (Air Toxics Control Measure).

Response

The 13,000 gal/month limit was chosen based on emission reductions attributable to station throughput for ISD. As shown on pages 81-82 of the staff report, 5 model stations were developed based on throughput distributions. Eliminating the lowest throughput stations (model GDF 1) from ISD requirements would eliminate 0.04 tons/day of the 6.6 tons/day of emission reductions attributable to ISD, or only 0.6% of the emission reductions. However, if the ISD throughput exemption were raised to 37,500 gal/month, this would forgo an additional 0.35 tons/day, which would translate to losing 6% of the potential emission reductions.

Note that the ISD requirement only applies to facilities already required to have vapor recovery systems by district rule or state regulation. If a station is exempt from vapor recovery due to the 40,000 gal/month throughput limit for the benzene, then the ISD requirements do not apply.

93. Comment by Guardian

The public handling of equipment with sensitive sensors that might shut down a station doesn't make sense. Guardian notes differences within a week in equipment installed at brand new service stations. This public handling of equipment should be considered carefully as the service station's income is at risk.

Response

We share Guardian's concern that vapor recovery equipment be durable and that the sensors operate properly. The certification process requires installation of the in-station diagnostics system at an operating station for a minimum of six months to verify that the monitoring system will work properly. During the six-month operational test the public will handle the equipment. Equipment that is not robust enough to withstand public handling will not likely pass the operational test and, therefore, will not be certified.

94. Comment by Hirt

A monitor is required on a central processor type system because a processor failure would reduce the efficiency on all on-site vapor nozzles. It follows that a monitor is required on a “pull-push” type system because of a failure of all vapor pumps. And a monitor is required on the balance system because of a blockage or significant leak in the vapor return pipe, for the same reason.

Response

We agree. The ISD requirements include monitoring for assist vapor pumps (A/L) and blockage in the balance vapor return line.

95. Comment by Incon

The objective to monitor and control the performance of vapor recovery systems is entirely feasible based on current technology, at least from INCON’s point of view. Although future diagnostic and monitoring systems may provide additional features to site operators, our feasibility comments specifically pertain to our expected ability to monitor the A/L ratio, the fuel system’s pressure and the performance of the enhanced vapor recovery system on site. Based on our work to date, we believe that we can provide products to the marketplace that will allow users to monitor these values and act in real-time to prevent and reduce fugitive emissions.

Response

We agree.

96. Comment by Incon

New product development is an extremely costly process that is evaluated and managed like any investment by a technical organization. CARB has worked aggressively to provide reasons and assurances to industry, encouraging investment and commercialization of new technology. The proposed phase-in schedule for ISD, however, is somewhat of a disincentive for companies to invest in new technology when the specifications and requirements may be reviewed and changed in two years. We would prefer that the new regulations stipulate that ISD will be a requirement on all systems installed after a date certain, which a phase-in of measurements that may be costly and complex at this time. We request that the Board mandate ISD and not allow this to be removed at the two-year review as any perceived lack of commitment to the ISD concept will discourage the evolution of technology.

Response

The Board agreed to a two-year review of the technology forcing components of ISD. Recent technological advances from ISD equipment developers and preliminary results from pilot ISD systems indicate ISD is feasible. However, the cost and reliability of ISD systems on both new and existing vapor recovery systems is unknown at this time; thus ARB cannot absolutely stipulate that the proposed ISD regulations will still be required in its present form after the two-

year review.

97. Comment by Kavlico

Pursuant to the ARB specification, a pressure sensor accuracy of ± 0.05 " water column pressure is specified over a full range of -5.0 " to $+5.0$ ". The accuracy of ± 0.05 " (0.5%) is very tight and would significantly increase the cost of a sensor. Robust pressure sensors built within high-volume production methods, with a Total Error Band accuracy of 2% to 3% are readily available at low cost and will probably achieve the UST pressure monitoring goals. These same accuracy characteristics would apply to measuring the low pressures in the vacuum-assist method of the ARB program as well. In contrast, a lab-grade sensor with an accuracy of let's say 0.5% may increase the unit cost by as much as ten times (in comparison to a 2% or 3% accuracy), even for volumes correlating to the number of gas stations in California.

Response

The pressure sensor accuracy demanded by the proposed regulations may be modified at the two-year review, depending upon the total cost and availability of sensors that can achieve the proposed accuracy.

98. Comment by Kavlico

Pursuant to the ARB specification, there needs to be an analysis of acceptable Total System Errors. The results will help to identify the accuracy that is required for the pressure sensor. Therefore, incremental pressure measurements throughout the specified range will provide meaningful data for the applications.

Response

The pressure sensor Total System Error includes the stated error from the manufacturer's specifications, the temperature error, the error transmitting the signal from the sensor to the recorder, the recorder's error interpreting the sensor signal, and electromagnetic interference. These errors will be evaluated during the ISD pilot program.

99. Comment by Kavlico

Pursuant to the ARB specification, there will need to be specifications as to whether or not an Explosion-Proof or Intrinsically-Safe sensor package will be required. Note that an E-P or I-S package in itself would triple or quadruple the unit cost of a pressure sensor. It may also be helpful for all environmental parameters to be further specified; in addition to Temperature, Humidity, etc, such as the possibility of a specification for Electro-magnetic Interference. The final sensor component design to meet all of these parameters will have an impact on the overall unit cost of the sensor.

Response

The sensor's explosion-proof or intrinsically-safe rating may be specified by the ISD system manufacturer, who must consider the sensor type and installation location. The required sensor accuracy must be sufficient to fulfill the EVR standards and specifications in CP-201.

100. Comment by Kavlico

Pursuant to the ARB specification, it is Kavlico's comment that pressure sensors as components should be certified at a component-level only. This would allow any component manufacturer to compete freely in order to be considered as part of any system approved for the ARB programs. Therefore, the system manufacturer or assembler could entertain the use of any pressure sensor that has been certified, provided it meets the required performance for the overall system. However, the current ARB proposal would result in significant testing and paperwork in order to certify every component, independently for each system. This would make open competition in any aftermarket sales of other sensor suppliers costly and time consuming.

Response

We will be able to evaluate the possible designation of a pressure sensor as a non-system-specific component as described in modified CP-201 section 16 during the ISD pilot program and subsequent technology review to be completed by April 2002.

101. Comment by OPW

Section 2.3.2 of the ISD Appendix states that if the ISD detects failure of the central vacuum unit, fuel dispensing shall not commence until the vapor recovery system is repaired. The station would be restricted from doing business during the time necessary to make the repairs. This would appear to be in conflict with the California Health and Safety Code section 42359.2 Emergency Variance.

Response

The ISD system shall provide the station operator with the capability to reset the ISD system to allow dispensing. The ISD system shall record the reset event. Local districts may specify conditions when reset is allowable.

102. Comment by San Diego

There remain many specifics to be identified concerning the in-station diagnostics (ISD's) that will be required. Field procedures for districts to use in verifying that the ISD's are working properly will be needed before ISD is implemented. Details will be needed on monitor sampling frequencies and the records that facility operators will be required to maintain.

Response

We agree that much work remains to be done in defining the specific ISD requirements. Additional detail was provided in the proposed CP-201 ISD

appendix which was made available on March 6, 2000. In Resolution 00-9, the Board directed staff, in cooperation with CAPCOA and WSPA, to develop a pilot program for ISD systems to be installed in test stations in several major metropolitan areas for evaluation and monitoring. It is the intent of the Board that the pilot program provide a basis for assessing inspection testing frequency requirements and to provide information for the technology review in 2002.

103. Comment by San Diego

The District is concerned that ISD will only provide audible or visual alarms upon detection of a defect. These types of alarms have historically been ignored or shut off by the station operators. As proposed, ISD would also prohibit dispensing if an identified defect is not repaired within a reasonable period of time. The implication is that dispensing would be allowable for some period of time despite the presence of a defect. Under current program requirements, a defect warrants tagging components or an entire facility out of order and requiring repairs before dispensing can resume. The District strongly urges ARB to require automatic gasoline dispensing shut-offs, proportional to the nature of the failure, upon detection.

Response

We agree that when certain failure modes are detected, gasoline dispensing should be shut-off. The type and degree of failures that warrant prohibition of gasoline dispensing will be determined with input from stakeholders before the ISD effective dates.

104. Comment by San Diego

The balance system ISD's would monitor for vapor return line blockage. However, once vapor piping has been installed properly, it is more likely that problems will arise with liquid retained in vapor hoses and failures of automatic draining devices. This was frequently observed in the 1999 field surveys and has a significant emissions impact. ISD requirements for balance systems should ensure that vapor hoses may not be blocked or restricted with liquid and that dispensing will be shut off if such blockage occurs.

Response

We agree. We define the vapor return line as the entire vapor return path from the nozzle to the underground piping, which includes the vapor hose.

105. Comment by San Diego

The ISD measurement parameters should include minimum and maximum gasoline dispensing flow rates. Currently, flow rates must be within specified ranges to validate vapor collection rates and minimize liquid losses.

Response

We agree that ISD systems should operate at the anticipated operating gasoline

dispensing flow rates. No change to the regulations is needed to assure that ISD will operate within dispensing flow rates.

106. Comment by San Diego

Proposed ISD Appendix, Section 1.2 – Automatic shutdown. Districts should be provided with test methods to verify a system will shut down dispensing when a malfunction is detected.

Response

We agree and will require that ISD systems include ways to check response to system defects that can be used by district inspectors.

107. Comment by San Diego

Proposed ISD Appendix, Section 1.5 – Failure mode testing. Failure mode testing should not be limited to the certification process. Districts should be able to conduct this type of testing for start-up purposes and compliance determinations.

Response

We agree, and will require ISD systems to provide failure mode test capability on their production units. Section 1.4 of the CP-201 Appendix states that “The ISD manufacturer shall provide a means of testing and calibrating the sensors or devices installed on the GDF vapor recovery ISD system, including procedures for verifying that the ISD system operates properly.”

108. Comment by San Diego

Proposed ISD Appendix, Section 1.6 – Annual testing of the diagnostic system. Records must be maintained of all equipment replacements to document any related data losses, and that data recorded up to the date of replacement be downloaded and made available to a district upon request. Records should also be kept of any required instrument, monitor or sensor calibrations. Calibration requirements must be specified in the ISD certification documents.

Response

The ISD system manufacturer’s certification application shall specify recommended instrument, monitor, and sensor calibration frequencies (CP-201 section 11.2 and CP-201 ISD Appendix section 8).

109. Comment by San Diego

Proposed ISD Appendix, Section 1.8 – Definition of new facility. Determining when either a single modification or series of changes at a facility constitutes greater than 50% of the existing vapor recovery system will be difficult and likely inconsistent among air districts. ARB should work with CAPCOA to develop consistent criteria that may be used by districts.

Response

Definitions for “new installation” and “major modification” have been added to D-200, Definitions for Vapor Recovery Procedures. A new installation means a gasoline dispensing facility that is not constructed as of the operative date of the latest amendments to Certification Procedure CP-201 or a gasoline dispensing facility constructed as of the operative date of the amendments to Certification Procedure CP-201 that has undergone a major modification on or after the operative date of the amendments. A major modification means the addition, replacement, or removal of an underground storage tank, underground piping, vapor piping within a dispenser, or a dispenser at an existing installation. The replacement of a dispenser is not a major modification when the replacement is occasioned by end-user damage to a dispenser.

110. Comment by San Diego

Proposed ISD Appendix, Section 2.1.2 – Malfunction Criteria. Under the proposal, the vapor collection rate on a vacuum assist system must fall to zero before gasoline dispensing is shut down. ARB should consider a threshold much closer to the allowable vapor collection rate to minimize excess emissions. At the least, there should be a non-resettable alarm that is activated at specified levels above or below the required vapor collection rate range. Vapor collection rates outside the required range for an extended time could pose a significant emission problem.

Response

The suggested change has been made. Section 2 of the CP-201 Appendix provide warnings for degradation when the A/L range is more than 25% out of the allowable range, and for shut-down when the A/L range is more than 75% out of the allowable range.

111. Comment by San Diego

Proposed ISD Appendix, Various Sections regarding the ISD implementation schedule. The schedule for ISD requirements at different size stations would be clearer if each facility gasoline throughput threshold was presented as a range (e.g. greater than 900,000 gallons per year but less than 1,800,000 gallons per year).

Response

The suggested change has been made. ISD is required for new installations with more than 1.8 million gal/year in April 2003. ISD is required for new installations between 160,000 gal/year and 1.8 million gal/year in April 2004. Stations with throughputs less than 160,000 gal/year are exempt from ISD.

112. Comment by San Diego

Proposed ISD Appendix, Section 2.2.1 – Blockage of the Vapor Return Line Monitoring. Blockage of the vapor return line needs to be more specifically

defined.

Response

The suggested change has been made. The criterion for balance systems is now defined as vapor collection flow performance monitoring, rather than blockage of the vapor return line. See section 2.1.2 of CP-201 Appendix 1.

113. Comment by San Diego

Proposed ISD Appendix, Section 2.3.2 – Malfunction Criteria. Failure of the central vacuum unit needs to be more specifically defined.

Response

Section 2.1.3.2 of CP-201 ISD Appendix provides more detailed malfunction criteria for central vacuum units. Additional criteria that is specific to an individual ISD system may be identified during the certification process and will be included in the system executive order.

114. Comment by San Diego

Proposed ISD Appendix, Section 2.4.2 – Malfunction Criteria. This section should refer to a processor rather than a central vacuum unit, typos need to be corrected and “failure of the processor” needs to be more specifically defined.

Response

The suggested change has been made. Vapor processor monitoring requirements are contained in section 2.3 of CP-201 ISD Appendix.

115. Comment by TRI

With future ISD implementation, volumetric measurement of the returned vapors will be accomplished most likely by instrumentation residing in the dispenser, downstream from the vapor pump. These measurements will not necessarily be the same as the traditional A/L tests, especially if large temperature differences exist between the UST and the vehicle tank. CARB staff needs to clearly define which measurement is applicable under what conditions.

Response

We agree. Section 2.1.1, Air/Liquid (A/L) Ratio Monitoring, requires that the ISD system shall monitor the A/L ratio. The A/L monitoring method may vary, but must be correlated with A/L tests as determined by TP-201.5.

116. Comment by Tosco

ISD is proposed to be delayed until April 2004. Table 2-1 of CP-201 should be modified to delay the pressure calculations and data logging defined in section 4.6 until the ISD operative date.

Response

ISD is required for stations with throughputs of more than 1.8 million gallons/year in April 2003. The Phase II requirements, including underground storage tank pressure criteria contained in section 4.6 of CP-201, also are effective in April 2003.

117. Comment by Tosco

The requirement for continuous monitoring of liquid blockage at each dispensing point is excessive and impractical. This is technology forcing and a more reasonable level of protection could be offered with the proposed continuous pressure monitoring.

Response

We agree the requirement is technology forcing, but ISD developers and data from pilot ISD systems indicate the requirement is feasible. The feasibility of dispenser-based monitoring will be presented at the two-year technology review.

118. Comment by Veeder-Root

Monitoring of the liquid condensation traps (CP-201, Section 4.13) should be added to the requirements for in-station diagnostics.

Response

Section 4.13.2 requires that liquid condensation traps be equipped with an alarm system in case of failure of the evacuation system. As these liquid traps are only needed at facilities where proper vapor recovery piping slope cannot be achieved, the alarm system does not necessarily need to be included in the ISD system requirements. However, an ISD system manufacturer could include monitoring of the liquid condensate trap as part of a certified ISD system.

119. Comment by Veeder-Root

In many cases the service station operator is not equipped to deal effectively with alarms. An alternative approach is to allow remote monitoring by a 3rd party vendor. This service provides decisions about needed maintenance or shutdowns required using personnel specially trained for that task. It automatically monitors the operation of the system and schedules and arranges for needed maintenance or other actions.

Response

CP-201 ISD Appendix provides requirements for ISD monitoring, which includes malfunction criteria that trigger alarms or shutdown of dispensing. Remote monitoring for ISD systems is neither required nor prohibited by the ISD requirements and is viewed as an option that may be considered by the service station operator.

120. Comment by Veeder-Root

A complete rewrite of Section 10, In-Station Diagnostic Systems was provided

with sections on ISD Features, system-specific design, vapor collection, vapor retention, vapor processor, liquid condensate traps, monthly reporting and other requirements.

Response

The suggested revisions were considered, and several included, in the drafting of CP-201 ISD Appendix.

121. Comment by Veeder-Root

ISD is more efficient and cost effective than frequent inspection and repair programs. If a yearly inspection finds a faulty system that is only collecting 50% of vapors at a site running 3,000 gallons per day, the daily loss would be about 11 lbs of hydrocarbons. If the losses were ongoing for a large part of the year, the losses would be 2000-4000 lbs. In contrast, a continuously monitoring ISD system which detects the failure, resulting in a repair done within a week, would result in a loss of only 80 lbs, a huge 25-50 times reduction. More frequent quarterly inspections would still result in large losses of 500-1000 lbs.

Response

We agree. ISD systems will provide continuous monitoring of vapor recovery system performance, resulting in rapid cost-effective detection of vapor recovery system failures, which will reduce hydrocarbon emissions.

122. Comment by Veeder-Root

The staff has proposed that ISD be implemented with alarms that disable dispensing on individual failed tests. Automated testing produces false alarms, so shutdown on single failed test events will result in improper interference with fueling operations. We strongly suggest that alarms and shutdowns be based on a collection of events rather than single failed tests. Also, adequate time should be allowed for response to alarms prior to shutdown, including notification, service scheduling and equipment repair.

Response

The suggested changes have been made in section 2 of CP-201 ISD Appendix.

123. Comment by Veeder-Root

We think that ISD will provide substantial benefits in both balance systems as well as vacuum assist systems. Currently the staff only recommends A/L measurement for assist systems. Numerous failure modes will go undetected in balance systems without A/L. We believe the attendant problems with air-flow-blocking ORVR vehicles can be solved.

Response

We agree. Requirements for vapor collection flow performance monitoring for balance vapor recovery systems are specified in section 2.1.2 of CP-201 ISD

Appendix.

124. Comment by Veeder-Root

Automated monitoring with ISD is feasible at reasonable cost. It can be included as an upgrade to existing ATG's, and it can be made available well in advance of the proposed operative date. The 2002 technology review is a sensible way to fine-tune ISD requirements after vendors are able to demonstrate their systems' capabilities and limitations.

Response

We agree.

125. Comment by VST

ISD requirements for any vapor recovery system can be met by April 2001 and there is no need to delay implementation of Module 6. VST, at least, will be able to provide full ISD in both assist and balance systems when certification tests begin this summer. Part of the problem with the currently used vapor recovery systems is ensuring compliance in the field, it is impossible, from a practical standpoint, to inspect in compliance. ISD will provide 24-hour monitoring of system compliance.

Response

We appreciate VST's confidence that ISD systems can be developed by April 2001. However, the Board has directed staff to conduct an ISD pilot study to assess the ISD prototype systems in the field and evaluate possible alternatives to ISD for the technology review to be completed by April 2002. The first ISD effective date is scheduled for April 2003 for high-throughput stations.

ORVR Compatibility

126. Comment by API

API supports the changes to delay the effective dates for some modules, but note that ARB staff has not delayed the effective date for ORVR compatibility (EVR Module 3). API has viewed ORVR compatibility as a technology-forcing requirement, and questions concerning how ORVR compatibility can best be addressed still exist. Particularly for existing systems, this module may be difficult or overly burdensome. For these reasons, the ORVR compatibility module should be included in the technology review, which we understand ARB staff plans to do.

Response

The operative date for ORVR compatibility was modified to April 1, 2003. All of the new EVR requirements, including ORVR compatibility, will be included in the technology review.

127. Comment by Hazlett

The compliance industry will expand by leaps and bounds as it tries to measure the loss from the on-board canisters of the 20 million ORVR vehicles in our future. When ORVR vehicles become predominant, only air is ingested into the underground tank when fueling with State II and equilibrium dictates ultimate volume growth. Loss from this effect is a function of time and may manifest itself before, during and after Stage I refueling. It will be difficult to measure at any one time or place. Therefore, any suggestion that pressure excursions observed within a few hours of the Stage I event should be disregarded invites detailed justification by staff. This is the very time that the adverse effects of ORVR on Stage II recovery processes will manifest itself.

Response

It is not our intent to disregard pressure excursions taking place during Phase I operations. This language has been clarified in CP-201, Section 4.6, Underground Storage Tank Pressure Criteria.

128. Comment by Healy

Three Healy nozzle systems have been already certified to be ORVR compatible. This was done in part because one of them was decertified because of ORVR incompatibility. Healy understood that the ORVR requirement would begin in April 2001, but discovered at the Board meeting that the ORVR operative date is April 2003. Healy and balance systems are ORVR compatible now, so why delay? If 10% of service stations are upgraded a year, mostly to assist systems, about 30% of stations will be upgraded without regard to ORVR compatibility. This will result in massive emission increases and nobody seems to be interested in doing something about it. There was a trade-off made between major oil to delay ORVR compatibility until 2003 if there was early implementation of Phase I requirements. Yet we have the ORVR technology in hand, the BAAQMD wants to employ it by June 2000 and it's not being supported by the state agency. Additionally, unihose dispensers, equipped with balance or Healy nozzles, are less expensive than any of the other assist systems currently being installed.

Response

ORVR compatibility has two elements. The first element is simply the ability to fuel vehicles equipped with ORVR. The Healy nozzle that was decertified failed to fuel all vehicles, including those equipped with ORVR, as required in existing regulations at CP-201 section 3.5, which specifies that Phase II systems must be capable of fueling any motor vehicle.

The second element of compatibility relates to Phase I and Phase II equipment interaction when fueling vehicles equipped with ORVR. As the numbers of vehicles equipped with ORVR increase in the California fleet, this type of compatibility will become of greater concern due to the possibility of vent and

fugitive emissions from the underground storage tank. See discussions of ORVR issues on pages 8-14 and page 36 of the ISOR/Staff Report.

In the modifications that the Board approved, the operative date is delayed until 2003, while the effective date is retained as April 2001. The effective date establishes the date from which installed systems may remain in use pursuant to Health and Safety Code section 41956.1 notwithstanding the revised standard. The operative date establishes the date from which equipment sold in California must comply with the standard.

Notwithstanding differing effective and operative dates, installed systems and a system installed after the effective date will all have to meet the standard on the same date. For ORVR compatibility, all systems must comply by 2005.

Several stakeholders, including some equipment manufacturers, support the 2003 operative date for ORVR compatibility. It is a reasonable compromise to retain the effective date for ORVR compatibility in 2001 so we can achieve the emission benefits by 2005, but to delay the operative date to 2003. Changing the operative date allows sales of systems that have not demonstrated ORVR compatibility until 2003, but these systems will also have to comply in 2005. Thus the incentive to purchase ORVR compatible systems remains unchanged. Emission reductions that may be lost by this delay are addressed through an agreement with CAPCOA and WSPA to expedite implementation of the Phase I requirements, which are close to five tons/day. See Resolution 00-9. Service stations upgrading before 2003 have the option of achieving ORVR compatibility early, in which case Healy has a marketing advantage as the only currently certified ORVR compatible system. Because of amendments to Health and Safety Code section 41954 (ch. 729, stats. 2000; Senate Bill 1300), ARB will certify only systems that demonstrate ORVR compatibility.

129. Comment by OPW

Section 4.4.3 makes the applicant responsible for developing a test procedure to demonstrate the compatibility of the system with ORVR vehicles. CARB has developed a multitude of test procedures to evaluate the performance of vapor recovery systems as a means to assure performance uniformity of systems requesting certification. In fact, CARB has developed a test procedure for ORVR compatibility that was never adopted. The test for ORVR compatibility should also be developed by CARB to ensure all are evaluated uniformly.

Response

Staff agrees that it is desirable to apply the same ORVR test procedure to all systems. However, it was discovered during trials of the draft ORVR procedure (which OPW notes was not adopted) that the procedure would need to be include several different alternatives to evaluate each of the various types of vapor recovery systems in use today. Because we cannot anticipate the

features of future systems, our decision was to require a case-by-case demonstration of ORVR compatibility where the test procedure will vary depending on the system characteristics and operation.

130. Comment by San Diego

ARB has proposed to test the emissions from Phase II vapor recovery systems when fueling a vehicle population mix representative at the time of certification, and when fueling a more fully developed ORVR population to ensure future compliance capability. The District supports this approach. When large numbers of EVR-certified systems are being installed (years 2004 and 2005) there will also be a growing number of ORVR equipped vehicles in the general population. Accordingly, it is important that systems meet the EVR-certification standards both with the ORVR vehicle mix in the general vehicle population at the time of certification and with a more fully developed ORVR vehicle fleet.

Response

We agree.

131. Comment from San Diego

Even though ORVR-equipped vehicles will become more common in the future, ARB data indicates that by 2010 ORVR vehicle refuelings will still only represent about 55% of total refuelings. Given the growth in population, the number of vehicles and VMT being experienced in San Diego and other parts of California, non-ORVR fuelings will continue to represent a significant emissions source for many years.

Response

We agree that Phase II vapor recovery systems will be necessary for many years to control emissions when fueling vehicles that are not equipped with ORVR.

132. Comment from San Diego

When systems are certified under EVR as ORVR compatible, ARB should identify any applicable system operating parameters that could be checked to determine if the system is operating properly during ORVR vehicle fueling. For example, if the system senses that an ORVR fueling is occurring and should adjust the vapor collection rate accordingly, the districts need to know how the system is expected to perform and have procedures for verifying that the system will do so.

Response

We agree. The certification executive orders will include this information.

133. Comment from Tosco

Pages 10-12 of section II, "Background", of the Executive Summary, outlines the

ARB's position of ORVR compatibility with balance vapor recovery systems. ARB's "Main concern was and still is the interaction of ORVR with assist systems" and through field testing, "The data verified that balance system pressures....became negative during the ORVR simulated fuelings." Tosco suggest that CP-201 section 4.4 should indicate that balance systems are inherently compatible provided the system meets all other requirements of CP-201.

Response

The field data collected thus far indicates that balance systems may be compatible with ORVR, however, balance systems will need to demonstrate ORVR compatibility the same as any other system during EVR certification.

Technology Review

134. Comment by API

API agrees with the views expressed by ARB staff and other regulators that implementation of technology-forcing provisions has risks and should not be rushed. API supports the concept of a rigorous technology review to be conducted and completed well before the effective date of the EVR proposal's technology forcing provisions. A stringent technology review should allow independent evaluation of equipment designed to meet the new requirements. As a result of the review, ARB should modify any requirements that are technically infeasible or not cost effective prior to the effective date. ARB should allow requirements to be met through alternatives that are either more effective for meeting the regulation's purpose, or as effective but less burdensome than those in the regulation. And API supports the recommendations of the Western States Petroleum Association (WSPA) regarding technology review workshops and reporting results of the review to the Board. This approach to technology review would allow a broad range of participants to develop and propose innovative solutions that could result in emission reductions more efficiently and cost effectively.

135. Comment by CIOMA

CIOMA strongly supports the technology review, provided it is rigorous, meaningful and that a real option exists to delay the implementation of the regulations if the review finds the technology inadequate. A peer review of findings would be an appropriate way to insure the best technical and scientific judgements are employed. Public workshops for stakeholders should also be held to assure that the information is available to the customer base.

136. Comment by WSPA

WSPA places great value and importance on the 2002 Technology Review and believes that the review must be both stringent and comprehensive. WSPA requests that ORVR compatibility be included in the list of issues to be

evaluated. The Board should establish that the technology review be complete, thorough and rigorous. One or more workshops should be held in conjunction with the technology review process and the final report should be brought before the Board at a public hearing.

Response

We will use all data available from both in-house testing, independent evaluations and cooperative studies with stakeholders to conduct the technology review. Alternative strategies that meet the requirements of the EVR proposal will also be considered. As stated in Resolution, the intent of the Board is that the review be comprehensive, thorough and rigorous and include an evaluation of all practical alternatives to, and means of meeting, the requirements of EVR. This includes the ORVR compatibility requirements. The Board has directed staff to hold one or more workshops in conjunction with the review, to complete the review no later than April 1, 2002 and to submit a final report to the Board for its consideration at a public meeting.

Processor Limits

137. Comment by Hirt

Table 8-1 in CP-201 imposes specific emission limits upon processors independent of other potential emissions from the vapor recovery system and the gasoline dispensing facility. Gasoline contains benzene, MTBE and other hazardous chemical compounds. An accurate risk assessment would include all sources of HAPS at a GDF – automobile exhaust emissions, gasoline cap removal emissions, idle nozzle emissions, Stage I and II vapor recovery system losses, spillage, spitback, fugitive emissions, etc. First quantify all the risks for vapor recovery equipped GDFs that don't use processors. Then quantify all the risks for vapor recovery equipped GDFs with integrated processors. The proposal has unfairly, inaccurately and unnecessarily frightened our potential customers. Section 4.6 of the proposed CP-201 allows unknown quantities of vapor to leak via storage tank pressurization (fugitive emissions). Table 8-1 singles out processors which guarantee increased Stage I and II vapor recovery efficiencies and eliminate fugitive emissions.

138. Comment by OPW

Tables 8-1 and 8-2 present maximum emission requirements for HAPs. The staff report states that data has been collected to determine the presence of HAPs in the exhaust of destructive processors. However, this data and the test procedure used to collect the data were not included in the staff report. There is no indication that testing has been done on other types of systems, total systems or at the vehicle fillpipe/nozzle interface to determine if these HAPs may be present during normal refueling. With incomplete testing, it would seem that no meaningful conclusions could be reached. In addition, test data has not been made available to the public showing processors create emissions greater than

already in the ambient air since vehicles emit benzene and 1,3-butadiene in the exhaust. Extensive research has shown that 1,3-butadiene is created only at extreme temperatures, pressure and in the presence of a catalyst. These requirements being proposed apply to only particular systems without a study of the potential impact from other systems. A uniform evaluation of HAPs from all systems and emission points would seem to be a more equitable approach so the new regulations can apply to all systems.

Response

Table 8-1 emission limits for selected HAPs provide reasonable emission caps for emissions that could occur at destructive processors which are not already accounted for in the CAPCOA Gasoline Service Station Industrywide Risk Assessment Guidelines (Staff Report/ISOR reference 14). This assures that processors certified under EVR do not add significant incremental risk to the overall GDF risk assessment. The service station guidelines already account for benzene, MTBE and other HAP emissions from loading and breathing losses from UST, from refueling exposure and spillage, but do not include HAP emissions from processors.

139. Comment by Hirt

Processor systems cost more than non-processor systems. Any excuse for a customer to buy a cheaper system will be grasped, quoted and acted upon. ARB should not be in the position of being partial or unfair or frightening potential customers toward or away from any one certified system in favor of another certified system.

Response

We will certify any system that meets our requirements. Different system types will have different criteria based on the mode of system operation. We do not favor any one certified system type over another.

140. Comment by Hirt

Hirt requests the data, instrumentation and test methodology supporting the HAPs limits proposed for processors. Hirt requests the data, instrumentation and test methodology supporting the lack of HAPs limits for all other GDF equipment. Hirt requests the State budget for HAPs which includes an allocation for GDFs.

Response

The test reports and memorandums supporting the HAPs limits for processors are attached. The State of California has determined under Proposition 65 that unleaded gasoline (wholly vaporized) is a carcinogen (title 22, CCR, section 12000(b)). Gasoline vapors are being evaluated for designation as a Toxic Air Contaminant under the AB 1807 Toxic Air Contaminant program. Gasoline vapors are already required to be included in Air Toxics Hot Spots program

(AB2588). Of the risk assessments reviewed as of April 1996, gasoline vapors represented the principal cancer risk in 15 of the approximately risk assessments reporting a total cancer risk equal to or greater than 1 in 1 million, and contributed to the total cancer risk in 74 of these risk assessments (Toxic Air Contaminant Identification List Summaries – ARB/SSD/SES September 1997).

141. Comment by Hirt

In paragraphs 6.1.1 and 6.1.3, we question the need to limit the A/L for processor based systems to 1.30 and for specifying a vapor guard. We know of no data to substantiate these requirements, indeed the Hirt VCS 400-7 demonstrated efficiency in excess of 95% during certification test with an A/L above 1.30 and without a vapor guard. In Table 8-2 we question any reason for limiting the “Maximum HC Rate to Processor” to 1.9 lb/1000 gallons. We submit that these parameters, A/L, vapor guard, and HC are a result of processor design and not, repeat not, performance parameters for CARB to specify.

Response

The A/L limit of 1.30 for systems with a processor was chosen to ensure that the volume of vapor and air, after vapor growth occurs, will not exceed the volume of fuel dispensed by more than 50 percent. With regard to the maximum HC rate to the processor in Tables 8-1 and 8-2, the limit has been changed from 1.9 lb./1,000 gallons to 5.7 lb./1,000 gallons. There will be occasions when a processor is not operating properly, and the station owner obtains a variance that allows the facility to operate until the repair can be made. The A/L and HC rate to the processor limits ensure that the impact on air quality from such an occurrence is minimized. If a system is designed so that excess emissions attributable to failure of a component such as the processor are minimized, an application may be made for certification of an innovative system. The vapor guard is an inexpensive and effective way to enhance vapor collection and minimize spillage due to spitback.

142. Comment by OPW

Table 6-1 requires that the maximum A/L ratio shall be 1.0 for systems without processors and 1.3 for systems with a processor. The report states that the 1.3 A/L limit for systems with a processor was selected so if the processor should fail the resulting emissions would not be greater than at an uncontrolled site, but no data was included to substantiate this position. The Hasstech/OPW system has demonstrated consistent performance efficiencies of 98%. With an A/L of 1.5, without a processor, and an assumed 25% vapor growth rate in the underground tank due to air ingestion, the emissions would be 3.35 lbs/1000 gallons dispensed. This is much less than the 7.6 lbs/1000 gallons from an uncontrolled site. In addition, the system would have efficiency greater than 50% during the short period while the processor was being repaired. We strongly urge removal of this design limitation to allow systems with processors

to achieve greater efficiencies rather than just meeting minimum performance requirements. The 1.3 A/L limit is a technology-limiting standard. The maximum HC rate to processor of 1.9 lbs/1000 gallons is another technology-limiting standard. No data has been presented to justify the effect of a higher rate.

143. Comment by OPW

An exception is taken to the statement made on page 56 of the staff report pertaining to the emission of unprocessed vapors from processors with burners that may be overloaded. The Hasstech/OPW system does not release unprocessed vapors under any circumstances.

Response to 142 and 143

Please see response to comment #141. The Hasstech system is currently certified with A/L ratios up to 2.4. Assuming a 25% vapor growth factor, the volume of vapor returned to the storage tank will be three times the volume of the fuel dispensed. When the processor is malfunctioning, the excess vapor will be released unprocessed, and the emissions will exceed those of an uncontrolled station by a factor of two. In light of the purpose for vapor recovery systems, i.e., to reduce emissions, it is unacceptable for a vapor recovery system to function as a vapor generator under any circumstances.

144. Comment by San Diego

The EVR staff report contains references to data and calculations that are not in the report. In some cases, there is no reference to the supporting data. For example, there is no emissions data in the staff report that supports the carbon monoxide, nitrogen oxide and toxic air contaminant standards proposed for destructive type processors (flare systems). There is no information in the staff report on the instrumentation and methods used to obtain the data that presumably supports these standards. ARB should provide the field data and calculations used to derive the proposed emission standards.

Response

The carbon monoxide and nitrogen oxide standards have been removed from the proposal. The toxic air contaminant emission caps are derived from ARB field test data and risk assessment calculations which are available upon request.

145. Comment by San Diego

ARB has proposed specific hazardous air pollutant (HAP)/health risk limits for vacuum assist systems with destructive processors. (HAP)/health risk standards should be applied to all certified vapor recovery systems. All systems will emit (or fail to control) some HAPs. If there are to be HAP or risk limits, they should also include uncontrolled losses (e.g. vent emissions) and uncollected emissions at the dispensing islands.

Response

We agree. The "CAPCOA Gasoline Service Station Industrywide Risk Assessment Guidelines (reference 14 of the ISOR/Staff Report) provide methodology for risk assessment for gasoline dispensing facilities. The CAPCOA guidelines, however, did not include assessment of HAPs from destructive processors.

146. Comment by San Diego

The recent ARB/air district audit of balance systems indicates vapor recovery efficiencies during vehicle fueling (Phase II) may be as low as 70% after the systems have been in use for a year or more. This is consistent with German tests that measured 62.8% Phase II efficiency under the conditions expected over time in the field. The failure of any system to collect vapors at the vehicle/nozzle interface will result in HAP emissions, at potentially greater risk to the public.

Response

Staff agrees that in-use balance systems should operate at the efficiency at which they are certified to reduce public exposure to gasoline vapors. Proper performance can be verified by conducting liquid blockage and dynamic backpressure testing. In-station diagnostics, as required in the EVR proposal, will provide real-time monitoring of balance system operation when implemented.

147. Comment by San Diego

ARB's proposal for HAP standards for service station flares appears to contradict ARB's approach to bulk terminal flares and to be inadequately supported by the available data. Burners and thermal oxidizers used at service stations and bulk terminals are flares. ARB promotes flares at bulk terminals. Terminal throughputs can average as high as 2.5 million gallons a day compared to 10,000 gallons per day at a typical station. Yet, there are no HAP, NOx or CO standards specific to bulk terminal flares.

Response

EVR addresses only vapor recovery systems at gasoline dispensing facilities which fuel vehicles, standards for bulk terminals are outside the scope of this rulemaking as these are certified under CP-203 and TP-203.1, which were not noticed for amendment. However, there are less than fifty terminals operating in California, compared to 11,250 service stations. The terminals are normally in industrial areas, while service stations operate close to where the general public work and live and are used by the public when fueling vehicles. The concern is the possible increased public exposure to hazardous air pollutants due to increased use of vapor processors to reduce underground storage tank pressures.

148. Comment by San Diego

ARB has provided only limited data that shows 1,3-butadiene emitted from the stack of a service station flare. It was measured at a level below some ambient concentrations. The compound is present in the ambient air, primarily from motor vehicle exhaust. The conditions that create this compound do not exist in flares. Flares do ingest large amounts of air containing 1,3-butadiene. The exhaust concentrations of HAPs from bulk terminal flares indicate they may remove HAPs from ambient air. Additional testing should be conducted of various types of vapor recovery systems to better characterize HAP emissions. In addition, testing of vapor recovery processors should include analysis of inlet and exhaust HAP.

Response

Additional data collected from a vapor processor is available from ARB staff. This data shows that HAP levels from the processor exceed the ambient air values that were collected the same day.

149. Comment by Tosco

The 1.3 A/L requirements and the processor emission monitor are not both necessary to provide assurance against significant emissions from processor failure. Decisions on this issue should be deferred to allow research and development of equipment capable of meeting all proposed regulations. Additionally, the maximum HC flow to processors should be established during certification so as not to be technology limiting by imposing a blanket limit of 1.9 lbs/1000 gallons.

Response

The A/L limit is needed to avoid excess air ingestion that can lead to vapor growth that may overload the processor capabilities. The maximum HC flow to the processor has been increased to 5.7 lb/1000 gallons. The system manufacturer may choose to seek certification as an innovative system as provided by CP-201 section 2.3, which allows flexibility in the design of vapor recovery systems. Under the innovative system provision, a vapor recovery system that fails to comply with an identified performance standard or specification may qualify as an innovative system, provided the system meets the primary emission factor and complies with other certification requirements.

150. Comment by Veeder-Root

The HC processor rate limit of 1.9 lb/1000 gallons should apply only to destructive processors (due to greenhouse gas emissions). Membranes should not have an input limit. The argument that the input should be limited when the processor fails is not legitimate: The processor sensors and/or ISD will detect a failure and shutdown dispensing. We suggest replacing this test with a limit on emission rate in lbs/1000 gallons dispensed of say, 25% of the maximum allowed, or $0.25 \times 0.38 \text{ lbs/1000 gal} = 0.095 \text{ lb/1000 gallons}$. This test could be added to the ISD requirements. It would use the certified processor emission

rate in lbs/hour for calculation based on processor on-time hours and fuel dispensed. This should be a daily test. This can apply to destructive processors also. Butadiene can also be included but without the dispensed fuel, just convert the limit 0.04 lb/yr to the equivalent 0.00011 lb/day.

Response

The HC processor feedrate has been increased to 5.7 lbs/1000 gallons. We maintain that this limit is necessary to minimize emissions on the event of processor failure. Monitoring of butadiene emissions is beyond the scope of ISD.

151. Comment by VST

Tying the A/L ratio to a possible processor failure seems to ignore the purpose of having ISD, which will indicate when a failure occurs so that it can be repaired. It would be more appropriate to specify a maximum emissions rate in the event of a processor failure at which the system can operate (for a period of time) until the processor is repaired; possibly < 1.9 lb/1000 gal.

Response

Our experience indicates that processor failures are not uncommon. ISD will assist in alerting the operator that processor failure occurs, but our concern is excess emissions during the failure period. A limit on the A/L ratio will provide a limit on excess air entering the system during normal operation and will thus minimize excess emissions due to vapor growth during the processor failure.

152. Comment by VST

The performance standard specifying the maximum allowed HC rate to the processor be < 1.9 lb/1000 gallons should be deleted. This proposed performance standard has no relationship to the operating characteristics of a non-destructive processor. This standard should be reworded to read that the maximum HC rate from a processor in the event of failure should be < 1.9 lb/1000 gallon. This would accomplish the goal as stated by ARB staff without design restrictions on the processor itself.

Response

The maximum allowed HC rate has been increased to 5.7 lbs/1000 gallons. If higher HC rates are desired, the system may be considered under the innovative system provision as discussed in the response to comment #149.

Warranty

153. Comment by OPW

Section 9.2.2 states that the warranty shall be for one year from the date of installation of all systems and components. Past experience indicates that the installation date is not always recorded. OPW had tried to implement a warranty

tag registration program where the service station owner was encouraged to fill out and return the warranty tag to OPW, but the response was disappointing. OPW suggests that the wording be revised to allow the date of manufacture in place of the date of installation for components. The service station personnel will be aware of the date of manufacture due to the warranty tag requirement in Section 9.2.3.

Response

The date of installation was selected in order to address in-use durability issues. If the date of manufacture starts the one-year warranty period, the warranty period may have run even before the system is installed. Responsibility for establishing the date of installation may be addressed by the manufacturer in its warranty provisions.

154. Comment by TRI

Proposals to closely regulate equipment warranties should be changed. It makes more sense to establish the long promised on-line equipment data base and let the market place decide equipment choices based on available reliability requirements rather than to regulate details of equipment warranties. Changing dispenser requirements to a two-hose configuration will expose those two hoses and nozzles additional use and possible abuse, and should call for a shorter warranty period.

Response

(see below)

155. Comment by Tokheim

It is urged that CARB not be involved in the Warranty business. Components of a dispensing system are designed to operate over the useful life of the device, not just the warranty period. A warranty period is established to handle fall out of premature failures. The selection of the wording “warranted against defects and workmanship” is used because the only mode of failure is failure of a component. The criterion for failure is performance. Tokheim’s standard warranty is 24 months from date of installation not to exceed 36 months from date of shipment. Applied warranty is a business decision and market driven. There is not direct relationship between warranty and reliability. The only way to ensure ongoing compliance is to have field inspections. During a workshop, Tokheim suggested a standardized field inspection document, or checklist, based on CARB standards. The bottom line is, if no one is looking, equipment will not be maintained. Compliance testing is more a CARB issue and field-testing will weed out unacceptable equipment.

Response to 154 and 155

The one-year warranty period is an existing requirement, not an amendment. Health and Safety Code section 41954 requires the Board to adopt standards

that are reasonable and necessary to achieve or maintain ambient air quality standards. CP-201 requires reasonable minimum equipment warranties that also guarantee that a product will meet performance standards and specifications for one year. Some manufacturers offer a longer warranty. We agree that an equipment database which provides information on equipment reliability would be useful in making vapor recovery purchase decisions. For this reason, the Board directed staff to work with WSPA and CAPCOA to establish a pilot program for equipment-reliability tracking (see Resolution 00-9). The ARB agrees that the warranty addresses reliability and in-use durability indirectly. Nonetheless, the warranty period serves as a de minimus guarantee of compliance with applicable performance standards and specifications.

CP-201 – Certification Standards and Procedures

156. Comment by ARID

A/L reductions to 1.00 will negatively impact collection efficiency during fueling of non-ORVR vehicles. The simple addition of a splashguard barrier to the base of the nozzle stem will not solve this problem.

Response

Certification tests have demonstrated that efficiency standards can be met by reducing the A/L and adding a “mini-boot” to the nozzle.

157. Comment by Bokides

Let’s hold the manufacturer’s feet to the fire when they sell us something that is supposed to do something, make it work. We shouldn’t have to pay for another round of things that don’t work. Third-party oversight is needed for any certifications. We need longer warranties for parts and labor. It doesn’t help to give parts warranties without labor warranties, as labor is where the real cost is.

Response

See the response to comments 154 and 155. Additionally, by requiring review of certification at 4-year intervals and by developing a pilot tracking system for equipment reliability, the ARB seeks to assure closer oversight of the in-use performance of certified equipment. While the ARB cannot address labor warranties, we have recognized these costs in the economic analysis and have considered their impact in developing the EVR regulations.

158. Comment by Hazlett

CARB proposes to enhance vapor recovery by simultaneously raising the recovery criteria to 98% and reducing the tolerance for leaks. This will entail considerable modification or replacement of current systems, including the simple push-pull system developed by Hazlett. Hazlett believes recoveries greater than 96% cannot occur without pressurizing the supply tank, which will

inhibit additional recovery or result in excessive fugitive emissions. Any increase to 98% will result in even greater pressurization.

Response

Hazlett has confused the Phase I and Phase II requirements. The new Phase I requirement is 98% efficiency. The Phase II requirement is being increased from 90% to 95%, although most systems are already certified to 95% based on district rules.

159. Comment by Hazlett

Both ORVR and Stage II systems that use bootless nozzles and vapor pumps between the nozzle and tank introduce excess air or energy into the system which leads to growth, pressure and unacceptable loss to the environment. To truly enhance vapor control, a distinctly different concept than vapor recovery, CARB should bite the bullet and go for vent vapor processing or redirect its energies to reduce the energy and excess air introduced into the underground tank. The latter can be most effectively accomplished by thermodynamic analysis of each proposed system and synergistic effects on adjacent functional states by in-house engineers who are experience in gas dynamics or put into the university system as thesis research potential.

Response

The new requirements for Phase II systems recognize the potential for excess emissions due to pressure growth in the underground storage tank. We have set performance standards and expect the manufacturers to design systems based on the analysis recommended by Hazlett to meet the standards.

160. Comment by Hazlett

CARB should accept the fact that any pressurization of the supply tank entails unmeasurable fugitive loss during the resident time or during the transfer process. Any positive pressure is referred to the nozzle where it acts to delay the nozzle cut-off response time thereby incrementally increasing liquid level, spitback and wetting of the boot. No component leak specification should be tightened unless it can be shown to be a gross contributor to the total leak problem. The P/V valve is not one of them. It is the intended and safe site for the release of undesirable pressure.

Response

We disagree. Performance of the vapor recovery system will be enhanced when leaks at all sources are minimized. Systems will need to demonstrate during the operational test that positive pressures do not exceed standards at the same time that leak requirements are met. We do agree that the P/V valve is the intended point of safe release of excessive pressures or vacuums.

161. Comment by Hazlett

In the proposed criteria for PV valves, I do not understand the double standard wherein one leak rate tolerance is quoted for manifold vent systems and a criterion three times as stringent for valves on a single vent system. Staff believes that three times the number of PV valves means three times the loss due to that particular function but neglects the fact that there is three times as much vapor to lose in systems with manifold. If this philosophy is to prevail, then similar criteria should be applied to nozzles, hoses and fittings in systems that return vapors to a manifold of tanks rather than those returned to individual tanks. It may be that CARB wants to encourage the use of the manifold approach vice the discrete vent. This choice will decrease the recovery capability of the simple push-pull systems. This may be just another example of arbitrary assignment of standards characteristic of regulatory driven engineering and the emotional appeal of forcing technology. In any event, the standards are unnecessarily stringent when put in perspective with the total problem. A PV valve is responsible for about 2 to 5% of the fugitive emission problem and is the safest site for release of unwanted vapors.

Response

The more stringent requirements for P/V valves are intended to reduce excess emissions from the P/V valves when the valves are in the closed position. There is one standard, the facility operator may choose to use one, two or three P/V valves but the total leak-rate must meet the standard.

162. Comment by Hirt

In order to assess the integrity of any given GDF, both Stage I and Stage II systems must be required to pass TP-201.3 leak test continuously, not intermittently, during an operational test of at least 180 days, prior to the conduct of any efficiency test.

Response

The TP-201.3 leak test prohibits fueling during the test. It is not possible to evaluate the vapor recovery system while conducting the TP-201.3 test continuously. However, pressure monitoring of the underground storage tank is performed continuously during the operational test and can be used to evaluate the pressure integrity of the vapor recovery system (CP-201, section 13.3.4).

163. Comment by Hirt

In order for the requirements in paragraphs 3.2.2 (drop tubes w/o overfill protection), 3.5 and 4.12 to be meaningful, leak rate at a pressure needs to be specified. Anything will leak if the pressure is high enough and not if the pressure is low enough.

Response

We agree. The leak requirements for drop tubes with overfill protection may not exceed 0.17 CFH at a pressure of 2.0 inches water column as specified in

section 3.3 (there is no section 3.2.2 in CP-201). The leakrates for P/V valves specified in section 3.5 have been modified so that they are now associated with pressures. There are no allowable leak rates for the vapor return path as described in section 4.12.

164. Comment by Hirt

To insure impartial evaluation of different systems, paragraph 4.5.1 (Compatibility of Phase II Systems with Phase I Systems) must include a definition of "Excess Emissions". What is considered excess to one test technician may be quite normal to another.

Response

Excess emissions mean any exceedance of the required emission standards. No judgement call is necessary. No change made.

165. Comment by Hirt

We beg to question the technical position that fugitive emissions are insignificant during the 2-hour exclusion for Stage I operation in paragraph 4.6.1 and for any other period of time where positive pressure excursions exist in the UST. Our experience and data are quite the opposite.

Response

We agree. The intent was not to exclude Phase I operations from determination of fugitive emissions, but to allow exclusion of fugitives that are due to noncompliant Phase I operations as described in modified section 4.6.1.

166. Comment by Hirt

Table 4-1 allows the vapor/air mixture, collected during dispensing episodes, to pressurize the UST to a daily average of $\leq +0.25$ " w.c. and a daily high of ≤ 1.5 " w.c. Paragraph 11.2.3 requires that a system not designed to maintain negative pressure in the UST, must have an ISD capability to "ensure that leaks are detected expeditiously". But an ISD cannot properly detect leaks because, as TP-201.3 correctly explains, this positive pressure causes inaccurate leak test results which prevent practical ISD testing. It is therefore vital that no vapor recovery system be allowed to operate with vapor under pressure or in the condition that prevents accurate leak integrity verification.

Response

We disagree. TP-201.3 can be biased by vapor growth during the pressure decay test, but not necessarily by positive pressure alone. TP-201.2 requires checks for vapor growth before conducting the test (section 6.2.3 of TP-201.3). Section 11.2.2, as originally noticed required that ISD have the capability to detect leaks, this section has been deleted and ISD requirements are now contained in the CP-201 ISD Appendix. The modified criteria for ISD monitoring of pressure integrity is contained in section 2.2.1.4 of the CP-201 ISD Appendix.

167. Comment by Husky

Section 13.1, 13.3. The proposed operational test is 8 times as stringent as the old test. The length of the test has been doubled to 180 days. The number of gallons at the test site has been doubled to 200,000 gallons/month. The dispensers now have 1 nozzle to pump all 3 fuels, this also doubles the fuel that is pumped by a nozzle. As a result, during the operational test, 8 (2 x 2 x 2) times as many cars will be fueled and 8 times as much fuel will be pumped by a nozzle. There is a shortage of stations that pump 200,000 gallons a month that can be used as test sites. The high RVP fuel in the winter will prevent any testing at that time because the fuel will cause the system pressures to exceed the 0.25 inches of water column pressure required. The total 180-day test will have to be done with summer fuel. CARB found that problem equipment in the field had not been inspected or maintained or should have been replaced. No matter how long the equipment is tested, it will still have a useful life. The ISD system will force this equipment to be replaced when it fails to collect vapors. Husky proposes staying with the 90 day test and changing to 150,000 gallons a month throughput. This will allow meeting the deadline of having EVR certified equipment in 1 year. Husky also recommends a standard operational test time, rather than “not less than 90 days”.

Response

The length of the operational test has been extended to better address issues of equipment durability. Vapor recovery systems will be expected to maintain underground storage tank pressure limits using both summer and winter fuels. The throughput for the test station, however, has been reduced to 150,000 gallons per month as requested. Also, the EVR implementation schedule has been modified to delay Phase II requirements until April 2003, which allows two more years to certify systems.

168. Comment by Husky

Section 4.10.2 Nozzle Dispenser Compatibility. The position of the hold open latch and lever is not important when the nozzle is in the dispenser, what is important in the nozzle is that both the fuel valve and the vapor valve are closed. The fuel valve being closed is required by fire codes for safety.

169. Comment by OPW

The concern should be that the product flow path of the nozzle is closed before the nozzle is replaced in its normal position in the dispenser. We suggest the wording of 4.10.2 should be “The nozzle and dispenser should be designed such that the nozzle product flow path is closed before the nozzle is replaced in its normal position in the dispenser.”

Response to 168 and 169

Section 4.10.2 has been revised to replace “hold open latch” with “nozzle

valves.”

170. Comment by Husky

Section 11.1.2. The requirement for drawings of the underground piping of a test site is not practical. Most test sites have not had any work done on their underground piping since the station was permitted and the piping drawings are no longer available. Husky proposes a performance requirement instead, by requiring tests that show how the underground vapor piping is connected, the flow resistance, and tests for liquid traps.

Response

The requirements for test site drawings are now contained in new section 11.8.4. Section 11.8.4 provides that the applicant may petition the Executive Officer to accept alternatives to as-built drawings of the test site, such as detailed schematics of the vapor piping configuration and/or photographs clearly identifying underground components.

171. Comment by Husky

The requirements for proof that the component and system has been tested and passed the required specifications means that all components must complete a 180 day durability test before they can start the CARB 180 day test. These means that after the EVR procedure has been approved it will be at least one year before any system can be approved! Husky proposes that this be changed to allow CARB testing of components and systems that have not previously been through a 180 day test if there is other evidence of their ability to pass the 180 test. Example: UL 100,000 cycle test.

Response

There has been some confusion regarding the extent of the testing that must be conducted and provided with the application for certification. Section 11 of CP-201 has been modified, and now includes the following statement:

For the preliminary application, the applicant shall have performed tests for all applicable performance specifications and standards. Engineering reports of successful test results for all these tests must be included in the preliminary application. In order to expedite the application process, the Executive Officer may determine that the application is acceptable based on the results of abbreviated operational and/or efficiency/emission factor testing. Test results shall be submitted for an operational test of at least 30 days, and for a test of at least 50 vehicles demonstrating adequate collection, or equivalent verification that the system is capable of meeting the performance standards and specifications.

Cycle testing will not be accepted in lieu of operational testing, because it has been our experience that problems are discovered during the operational test even when equipment has passed extensive cycle testing. The required preliminary testing is not as extensive as originally interpreted, and will not

cause excessive delays.

172. Comment by Husky

The proposed Efficiency test TP-201.2 has been changed so that pass or fail depends on the RVP of the fuel being delivered and other uncontrollable factors. The new procedure is not for a **vapor** recovery system, but a **hydrocarbon** recovery system. The vapors being recovered come from the cars fuel tank and we do not know the RVP of the fuel after it has been in the tank for several days. Phase I and Phase II systems do not capture lbs of hydrocarbons, they capture cubic feet of hydrocarbon vapors. Husky proposes staying with the present 95% efficiency based on measured hydrocarbons collected compared to total measured hydrocarbons available to be collected.

Response

We agree that different emissions will result depending on the RVP of the fuel dispensed. Therefore, the Phase II standard has been revised in modified section 4.1.1 of CP-201 to require 95% efficiency and an emission factor of 0.38 lbs/1000 gallons when testing is conducted with summer fuel and 95% efficiency or 0.38 lbs/1000 gallons when testing is conducted with winter fuel.

173. Comment by Husky

Sections 16 and 17, Certification of Systems/Components. When we certify a balance nozzle, the way it is proposed the nozzle manufacturer would be responsible for: all the hanging hardware, the dispenser, the underground piping, the UST and the ISD. This is the tail wagging the dog. Husky proposes certification by type and equipment by manufacturer for three main types of systems: assist, balance and assist with processor. Husky proposes specific criteria for each system type. This will reduce the number of 180 day 200 car tests that each piece of equipment would have to go through.

Response

State law directs ARB to certify vapor recovery systems, not components. However, some components have been identified as “non-system-specific” components that may undergo less than full certification testing to be added to an existing certified system. Nozzles are identified as “system-specific” components as nozzles are a key factor in the performance of the vapor recovery system. Full certification testing is required for system-specific components, e.g., nozzles, which affect the overall efficiency of the vapor recovery system.

174. Comment by Husky

The fill neck standard (Specifications for Fill Pipes and Openings of Motor Vehicle Fuel Tanks”, Title 13, CCR Section 2290) needs to be included in all nozzle tests, or we cannot be expected to pass a test if the fill neck does not fit the nozzle and hold it at the 30 degree down angle required.

Response

Section 3.2 of modified TP-201.2 states that vehicles which do not conform to CARB specifications for fillpipes and openings of motor vehicle fuel tanks, title 13, CCR, section 2235 shall be excluded from the test matrix.

175. Comment by Husky

Table 5-1, Balance Nozzle Vapor Valve Leak Rate. The proposed EVR allowable vapor valve leak rate is OK for new nozzles out of the box, but after a nozzle has been in use for even one day the leak rate may be higher. This is because there is no way to control the foreign material that is sucked in with the vapors. Nozzle vapor valve leak rates can be much higher with very little effect on the system vapor recovery efficiency. On a balance system if a vapor valve leaks, vapors may escape through the idle nozzles on the dispenser while fueling from one of the nozzles. Husky's calculations indicate that if all 5 of the idle nozzles leaked at a rate of 0.23 cfh at 2 " pressure, the loss in efficiency of the nozzle would only be ½%. Husky proposes a maximum allowable leak rate in the field for balance nozzles of 0.15 cfh at 2 inches water column pressure. This would have less than a 0.1% effect on the system efficiency.

Response

The allowable leak rate for nozzle vapor valves can be reviewed during the Technology Review. If it is determined necessary and appropriate, in-use standards that are less stringent than the current EVR standards may be proposed at that time.

176. Comment by Husky

Table 6-1, Assist Nozzle Vapor Valve Leak Rate. The proposed EVR allowable leak rates are OK for new nozzles out of the box, but after a nozzle has been in use for even one day the leak rate may be higher. This is because there is no way to control the foreign material that is sucked in with the vapors. Nozzle vapor valve leak rates can be much higher with very little effect on the system vapor recovery efficiency. TP-201.3 allows a leak rate of 4 cfh at 2 inches of water column pressure. With only 1 nozzle per dispenser side the leak rate at a vacuum does not matter, and with a maximum average system pressure of 0.25 inches there should be no vapors lost through any small leak as long as the system can pass the pressure decay test TP-201.3. In place of doing a TP-201.3 leak decay test, the nozzles could be tested in the field for maximum leak rate of 0.07 cfh at 2 inches. This is only 0.84 cfh for 12 nozzles, only 20% of that allowed by TP-201.3.

Response

See response to comment #175. We agree that with only one hose per dispenser side, the nozzle leak rate at high vacuum is less important. However, the unihose requirement applies only to new or modified dispensers, and the deadhead vacuum applied to the vapor valve can be as much as 100 inches

water column if there is a liquid blockage in the vapor line of the nozzle in use.

178. Comment by OPW

Tables 5-1 and 6-1 provide different allowable leak rates for balance and assist nozzles. We suggest the same standard leak rate for all nozzles used on all systems. It is not clear why there should be two standards when the goal is to minimize emission sources.

179. Comment by Tosco

The maximum allowable leak rate on the vapor check valve on assist systems should be similar to the allowable leak rate for balance systems. Since all UST pressures are now limited per section 4.6, there is no justification for a more stringent leak requirement on assist nozzles. Additionally, the performance requirement of 0.1 CFH @ -100" W.C. is excessive. The current standards limiting the HC rate to processors will not allow this kind of vacuum to occur within the UST systems.

180. Comment by TRI

Throughout most of 1999, CARB staff has proposed allowable maximum nozzle leak rates equal for both balance and assist systems. Documents distributed at the January 19 workshop still list these maximum leak rates as equal. The staff report lists allowable leak rates as 0.07 CFH for balance and 0.038 CFH for assist nozzles at a pressure of 2 inches water column. A need for differing standards has not been discussed, a single standard of 0.07 CFH is still appropriate. If currently proposed standards are maintained, CARB staff must justify these on the basis of sound engineering principles. We have pointed this discrepancy between balance and assist system treatment several times without receiving an adequate response, based on sound engineering principles.

181. Comment by VST

Typographical error, 0.038 should be 0.38 and 0.07 should be 0.17.

Response to 178-181

Please see responses to comments #175 through #176. There have been different allowable leak rates for balance and vacuum assist systems for years. These were developed in response to concerns about increased emissions from assist systems that frequently operated at positive pressures. The 0.038 CFH at 2 inches water column has been specified in certification Executive Orders for years. There is no reason to adopt a less stringent standard under the EVR regulation.

It is valid to impose more stringent standards for vacuum assist systems, because those systems may continue to operate at positive system pressures until 2007, and replacement nozzles should be required to continue meeting the standard required in the certification Executive Orders under which those

systems are currently certified (and allowed to operate until 2007). These Executive Orders also require nozzles to meet the specification of 0.005 CFH at a vacuum of -27 inches water column. The standard in the EVR regulation, 0.10 CFH at -100 inches water column, is of similar stringency. This was modified in response to concerns about the difficulty of measuring the 0.005 flow rate, and also about the fact that a vacuum of -100 inches water column could be created on idle nozzles on a multi-hose dispenser under some conditions. As stated above, there is no reason to adopt specifications under the EVR regulation that are less stringent than those imposed on (and presumably met by) the currently certified systems.

182. Comment by Husky

There should be a rapid appeal process for adverse decisions that fail systems during the certification process. Husky has been failed twice on the 85th day of the 90-day test, once for a pinhole in the bellows through which a grain of sand would not pass, let alone vapors. The other test was failed for a tear in 1 certified hose out of 36. The nozzle had no effect on the hose, but a vapor recovery system with enhanced features was denied the opportunity to prove itself.

Response

The test referred to by Husky was terminated because of numerous small holes in several nozzle bellows. A district inspector visited the station and wrote a notice requiring the replacement of several nozzle bellows. The test was terminated because the nozzle bellows appeared sufficiently damaged to require replacement after less than three months in use, and we had serious concerns about the longevity of this component. Husky responded by designing a protective collar for the lower bellows, and passed subsequent testing. With regard to the other test mentioned by Husky, it is sometimes necessary to terminate a test of a system due to the failure of a component not manufactured by the primary applicant. There must be a viable test of the entire system in order to certify any system-specific component such as a nozzle.

183. Comment by Husky

The decision to proceed with the 100- or 200-car efficiency test should be the manufacturers: if there is a pin hole in the bellows and the manufacturer wants to go ahead and test, he should be allowed to prove it or fail.

Response

The decision to proceed with an efficiency test of a system is made only after CARB has determined that the system can be expected to perform effectively for at least the warranty period. There is more to the evaluation of the system than “hang time” and an efficiency test. The ability to pass an efficiency test is not the only measure of reliability that must be demonstrated; the system must be capable of meeting all the applicable standards and specifications.

184. Comment by Husky

Component testing of nozzles should be allowed. The nozzle is the point of contact between the two most powerful industries on earth.. oil and autos. Therefore, it is a focal point far outside of its actual importance. The nozzle is only a valve and a conduit. Therefore, it can be rationally evaluated to established standards. And once it has been tested to these standards, it will repeatedly test the same. As in, a balance nozzle that has passed its tests on X's system would also pass on Y and Z's system if an engineering evaluation determines all three are similar, just as we have today. The same goes with a vacuum assist nozzle especially since, with EVR there will probably be a standard nozzle for most systems. The second reason for component certification of nozzles is that we are ready to start testing of Enhanced Vapor Recovery nozzles now. But the nozzles don't sense vapor for ORVR, nor do installation diagnostics of the vapor recovery system, nor even affect system pressures. All they do is a better job of recovering and retaining vapors and pumping fuel. If allowed to stand alone as a certified component, they will begin enhancing pollution control and public health sooner rather than later.

Response

Nozzles are more than a simple valve and a conduit. The design of the nozzle affects many aspects of the performance, such as the amount of vapor generated as the liquid flows from the spout, the sensitivity of the nozzle shutoff mechanism, the integrity of the vapor path and vapor valve, the amount of liquid retention, and ease of use, to name a few. Unlike a component such as a hose or breakaway, which can be evaluated by measuring and comparing specifications such as pressure drop and durability, the nozzle is too complex to be considered non-system-specific. The complexity of the design of the nozzle can be expected to increase further to address the new requirements of the EVR program.

185. Comment by Marconi

CP-201, Section 13, Vapor Recovery Certification Testing, states that "The Executive Officer shall conduct, or shall contract for and observe, evaluation and testing of vapor recovery systems conducted for the purpose of certification." If this means Marconi Commerce Systems cannot perform certification testing with the approval and supervision of ARB staff as we have in the past, then we strongly object to this provision and respectfully request that it be amended to permit manufacturers to perform certification testing. Marconi already maintains a fully instrumented test trailer at considerable expense, and if forced to pay a contractor for purposes of certification, would be faced with a considerable financial burden.

Response

Certification testing conducted by the manufacturer of the vapor recovery system

seeking ARB certification presents a conflict of interest. Marconi can still use their test trailer to obtain or develop testing capability to generate test data for the certification application. Certification testing costs were included in the EVR economic analysis. No change made.

186. Comment by OPW

The “operational test” period has been increased from “at least 90 days” to “at least 180 days” in Section 13.3. In addition, the test station throughput has been increased from a minimum of 100,000 gallons/month to a minimum of 200,000 gallons/month in Section 13.1.1. Both of these changes will provide additional usage of the system/components being evaluated. The concern is that the increased throughput requirement will reduce the number of potential test sites in Sacramento. It is OPW’s experience that stations meeting the throughput requirement are not always receptive to the interruptions to their business caused by testing associated with the certification process. Since the intent of the operational period is to demonstrate the performance and durability of the equipment, a suggested alternative approach would be to test either with the 200,000 gallon throughput for ninety days or with 100,000 gallon throughput. Both would assure the same gallon throughput for the equipment being tested and at the same time would increase the number of potential test sites.

Response

The intent of the increased time and throughput requirements is to improve evaluation of the durability and reliability of systems during certification. While the minimum 180-day operational test has not been modified, section 13.1.1 has been modified to allow 150,000 gallon/month throughput, in place of the 200,000 gallon/month originally proposed.

187. Comment by OPW

The “Final Application Complete” section in Table 11-1 should be clarified and expanded. The various groups reviewing the certifications should be identified and a time limit stated for each to complete their respective reviews. This will assist the applicant in understanding the process and provide a structured system for the certification to assure completion in a timely manner. This would improve the present process which has no structure or time control to prevent the certification process from living forever.

Response

The time requirements specified in Table 11-1 are independent of who is involved in reviewing the certification. As stated in Resolution 00-9, the Board directed that a Memorandum of Agreement be developed between the Board and CAPCOA that furthers district participation, within reasonable review times as provided in section 60030, title 17, CCR, in the certification of vapor recovery systems.

188. Comment by OPW

The determination of underground storage tank pressure and in particular how frequent the tank pressure will be recorded in the 30 day rolling average as outlined in Section 4.6.4 has been omitted. It appears the suggested methodology may lead to “out-of-compliance” conditions for extensive periods of time.

Response

This section was not intended to allow extensive periods of non-compliance. Rather, it ensures that a non-compliant Phase I activity will not be the cause of failure of a Phase II system, provided that the Phase II system does not cause the condition that created the Phase I problem. For example, a cargo tank with a defective vapor valve that fails to open and causes excessive venting during the fuel delivery should not be considered a failure of the Phase II system. This section was modified to clarify the intent.

189. Comment by OPW

The staff report states that an A/L ratio of 1.0 is theoretically ideal since the volume of vapor returned to the storage tank is equal to the volume of liquid dispensed. The A/L is a measurement tool used to determine if the system is operating as certified. Therefore, there should not be an A/L limit since that will restrict the technology of vapor collection and management. Systems should be evaluated on performance specifications, not design specifications.

Response

The A/L limit is necessary to limit excess emissions due to vapor growth. Large A/L limits have been allowed on previously certified systems with vapor processors, which have resulted in significant excess emissions upon processor failure. Section 2.3 of CP-201 provides a mechanism for certifying systems above the A/L limit as “innovative systems” if all other certification requirements are met.

190. Comment by San Diego

The EVR proposal includes a 180-day operational/reliability test as part of the system certification tests. ARB must ensure that all inspections, maintenance, repairs, adjustments that occur during the operational test are recorded and verified and that no maintenance, repairs, adjustments or replacements will be allowed during the test period unless such work or changes can reasonably be expected to be performed in actual facility installations and are required in the manufacturer’s I&M requirements or in the certification orders. The certification operational test must be used only for valid reliability testing, not for shakedown improvements of a system.

Response

We agree. Limitations on maintenance and repairs allowable during the

operational test are outlined in section 13.3.2 of CP-201. Section 13 states that “any applicant or representative of an applicant found to have performed unauthorized maintenance, or to have attempted to conceal or falsify information, including test results and/or equipment failures may be subject to civil and criminal penalties and testing of the system or component shall be terminated.”

191. Comment by San Diego

It is not difficult to affect the outcome of gasoline station emission testing, especially for intensive certification tests when field personnel are focused on the relatively few nozzles that are instrumented and tested. For example, the vapor collection rate can be increased on the test dispensers and lowered or restricted on dispensers not being tested. The net result may be an appearance of high collection/capture efficiency and little or no measured vent emissions. In reality, excess emissions are not being measured and therefore not considered in the certification evaluation. It is important that the certification testing evaluate not only the test dispensers.

Response

We disagree that ARB certification tests ignore the effect of the non-instrumented dispensers. In fact, A/L values on all nozzles are documented during certification testing. This prevents the situation described in the comment from biasing the emission results.

192. Comment by San Diego

ARB should follow scientific methods in the certification process, including an analysis of how changes in physical parameters such as gasoline volatility, temperature differences and barometric pressures can directly affect emissions test results or indirectly affect the validity of the results.

Response

ARB test procedures are based on scientific and engineering principles. The physical parameters mentioned will be collected during EVR certification tests.

193. Comment by San Diego

Section 3.1, page 5 of CP-201. This section lists two different standards for Phase I systems, a volumetric efficiency of 98% and an emission rate of 0.15 lbs. They will not usually be the same. Do both standards apply? This should be clarified in the procedure.

Response

Section 3.1 has been rewritten to clarify the Phase I requirements. The volumetric efficiency shall apply to all Phase I systems. The emission rate of 0.15 per 1000 gallons dispensed is applicable to systems with processors.

194. Comment by San Diego

Page 30 of the Staff Report and page 14 of CP-201 discuss backpressures in vapor return lines. ARB could simplify the test and specify one nitrogen flow rate for testing. There is no technical reason for requiring two levels of nitrogen flow. Piping characteristics do not change from one level of nitrogen flow to another.

Response

TP-201.4, the test method for determination of dynamic backpressure in vapor return lines, is not one of the amended procedures in this rulemaking. The suggested simplification of the test procedure will be considered in future amendments.

195. Comment by San Diego

Subsections 13.5.1 and 13.5.2 of CP-201, page 30. Both subsections on Phase I and Phase II tests state that a failure of the integrity test invalidates the test results "...unless the Executive Officer determines that the integrity failure did not result in any significant unmeasured emissions." To estimate emissions without direct measurements requires estimates of leak sizes, orifice coefficients, density of the vapor/air mixture, and the average pressure difference across the leak or leaks. ARB should only conduct certification tests at leak-free, gas-tight facilities so that unmeasured emissions do not compromise the accuracy of the testing.

Response

We have developed a fugitive emission test to quantitate emissions due to leaks for certification purposes. Fugitive emissions will occur if the system operates at positive gauge pressures in the underground storage tank. If the underground storage tank operates at negative pressure, then any pressure integrity failure will result in air being drawn in, not unmeasured fugitive emissions.

196. Comment by San Diego

The test procedure for CO and HC emissions from a service station flare requires the mass emissions from the storage tank vent be measured using a sleeve if the system has a processor. The procedure should also determine the hydrocarbon emissions that by-pass the flame during cold start-up and place a limit on start-up time. CO and HC emissions tests during the burn cycle should be replaced with requirements that at least 90% of the flame be clear blue and visible emissions limited to 5% opacity or less. This will achieve the same results at far less cost. Also, ARB should include a mass emission vent test for balance systems and a requirement that the vapor control system integrity tests be conducted with the test equipment in place. Soap solution should be used to leak check sample lines and hydrocarbon analyzers should be leak checked.

Response

The CO standards have been removed from the EVR proposal. HC emissions

are included in the efficiency test as specified in TP-201.2.

197. Comment by San Diego

The District has expressed continuing concerns with ARB's proposed procedure to quantify fugitive emissions during certification testing. ARB's proposed procedure is inherently inaccurate. Moreover, emissions might be more significantly affected by where and when a leak occurs than is predicted by an estimated mass emission rate derived from a pressure decay/leak rate test. For example, a leak in a vapor hose fitting might appear small in a pressure decay/leak test but if it prevents a system from clearing a vapor return hose of liquid, its emissions impact is much more significant. If this occurs on a nozzle at a certification test site that is not one of the nozzles being tested, it may cause measured emissions from the underground tanks to be smaller and unmeasured emissions during dispensing to be greater. The certification emissions tests will provide more accurate results if the test site is as free of fugitive leaks as possible and reliance on an estimated fugitive leak rate is minimized.

Response

The ARB's fugitive test procedure is based on engineering principles and provides a valid estimate of fugitive emissions. It is one of four measures of emissions during Phase II certification tests. Emissions at the other three test points; nozzle/vehicle interface, vent and processor; are quantitated by direct measurement. The District's point is that by reducing leaks as much as possible, then emissions will be more likely to be released at the points with direct measurement, rather than estimated as fugitive emissions, and thus provide a more accurate emission measurement. This point is well taken, however, our position is that systems undergo certification testing under normal operating conditions, which includes allowable leaks.

198. Comment by San Diego

Recent District and ARB testing indicated a higher leakage failure rate for standard drop tubes than drop tubes with OPD's. CP-201 should specify allowable leak rates for standard drop tube assemblies as well.

Response

Section 3.3 of CP-201 states that "Drop tubes that do not have an over-fill protection device shall not leak."

199. Comment by TRI

With the recommendation of using a 7.6 lb/1000 gallons uncontrolled emission factor comes the requirement to meet maximum losses of 0.38 lbs/1000 gallons for 95% efficiency and no mechanism to change the emission factor for wintertime testing. Winter gasoline may be at 11 psi vapor pressure, necessitating a factor of 12.2 lbs/1000 gallons and an allowable loss of 0.61 lbs/1000 gallons. With the proposed emissions factor, it will be much more

difficult to pass certification tests during the summer and next to impossible to pass winter testing, since a maximum loss of 0.38 lbs/1000 gallons would require an efficiency of 97% on winter gasoline.

Response

The emission factor requirement has been modified to even the playing field for summer and winter testing. As stated in section 4.1.1 of modified CP-201, the standard is 95% and 0.38 lbs/1000 gallons when testing with summer fuel. The standard is 95% or 0.38 lbs/1000 gallons when testing with winter fuel.

200. Comment by TRI

The 200,000 gallons/month minimum test station requirement is unreasonable. Page 81 of the staff report lists 1998 statewide average throughput at 100,000/month. Before doubling throughput requirements, CARB staff should survey available test sites in the Sacramento area. With an expected need to certify over 60 systems, it is unlikely that number of high throughput stations exists within 100 miles of Sacramento. In addition, due to disruption of normal operations, operators of high throughput stations are very reluctant to make their sites available for testing;

Response

The minimum test station throughput has been lowered to 150,000 gallons/month in modified section 13.1.1 of CP-201. Throughputs as low as 100,000 gallons a month, or locations outside the 100 mile radius, may be allowable, with good cause, upon Executive Officer approval as stated in sections 13.1.1 and 13.1.2.

201. Comment by Tokheim

Extending the test period will not automatically make the equipment more reliable. The equipment certification test should be performance requirements that prove the design of the equipment. Equipment should be designed to meet the performance standards for the useful life of the equipment, not for a specific test period or even a warranty period. The only way to verify if equipment works in real life is test it on a regular basis with a good field inspection procedure. Equipment that consistently fails this test just won't get bought. CARB should not be in the middle of specifying reliability requirements.

Response

As stated in the ISOR/Staff Report (p. 2), the two main goals of EVR are to achieve additional emission reductions and improve the certification process to increase in-use reliability of vapor recovery systems at gasoline stations. Field inspections as suggested by the commenter have been conducted in statewide audits (see ISOR/Staff Report p. 14). The results indicate that existing certification procedures were not sufficient to assess the durability and reliability of the system. Thus, the certification procedure set forth in CP-201 has been

strengthened and test periods extended. The improved certification process, coupled with regular field inspections, should result in better system operation.

202. Comment by Tokheim

Section 4.6. Tokheim applauds CARB for making underground storage tank pressure limits consistent for both assist and balance systems.

Response

ARB appreciates the commenter's support. Minimizing pressure-related fugitive emissions from the underground storage tank vapor space is independent of the type of Phase II system.

203. Comment by Tokheim

Liquid Removal, Section 4.10. The proposed changes apply only to balance systems. To be consistent, liquid removal requirements should be applicable to both balance and assist systems.

Response

Liquid removal is critical for balance systems, as there is no vapor pump to recover vapors, as there is for assist systems. Thus, the final regulations require liquid removal standards for balance systems as determined by TP-201.6. We agree, however, that assist systems may also be subject to liquid blockage, but TP-201.6 cannot be used on assist systems. We plan to develop a test procedure for liquid blockage on assist systems in the future.

204. Comment by Tokheim

Vapor Return Piping, Section 4.11. It is unclear why there needs to be a specification for a maximum length of pipe run when there is a proposal to set guidelines for pressure drop for components in the system. The allowable pressure drop in itself will dictate the maximum length of the run. If the installation requires a longer run, than you conceivably increase the diameter of the pipe to compensate for the length.

Response

Certifications which do not contain specifications for maximum length of pipe runs have been interpreted as allowing pipe runs in excess of 800 feet. This requirement is intended to establish easily understood reasonable limits. An applicant may, with appropriate supporting documentation, request a certification that provides for longer runs with larger diameter pipe.

205. Comment by Tokheim

Dynamic Backpressure, Section 5.2. The proposed requirement lowers the overall backpressure at all flow rates. It is unclear where and if equipment can meet these requirements considering that most equipment was certified at higher levels.

206. Comment by Tokheim

Component Pressure Drop Limits, Section 5.2. The concept of component pressure drops has been discussed for some time and is acceptable. Tokheim would like to see this as a guideline, not a specification.

Response to 205 and 206

The dynamic backpressure limits for balance systems were developed many years ago, and were based on dual hose systems with vapor hoses as small as 5/8 inch ID. Coaxial hoses, which have considerably less backpressure, were subsequently developed and have been required on all new installations since 1986. Unfortunately, because there were no specifications for individual components, some components "used up" this surplus and were certified, but comply with the system limits only when combined with certain other components. Therefore, it was possible to combine certified components that exceeded the overall system limitation. In order to solve this problem, limits were developed for each component in the system. Components that comply with the specified limits will not exceed the system maximum allowable dynamic backpressure in any properly installed combination. Some previously certified components may not qualify for certification under EVR unless they are modified, but there are some components of every type that comply with the EVR backpressure limits.

207. Comment by Tosco

The liquid retention, dripleanness and spillage requirements proposed by CARB are redundant regulations that confuse the ultimate goal of redundant emissions resulting from spillage. The test procedures for liquid retention mirror those for dripleanness with the exception of walking out the hose for the liquid retention test and the units used for measuring volumes. Separation of these items into two separate criteria offers no additional reduction in emissions and demands additional testing procedures with no resulting benefits. Additionally, the proposed reduction of total spillage provides the desired decrease in emissions.

Based upon development of new equipment and that items such as liquid retention and dripleanness that confuses the regulation be stricken.

Response

We disagree. Liquid retention, spillage and dripleless nozzle requirements are separate emission categories and may require different control techniques.

208. Comment by Tosco

As the test for liquid retention and dripleanness are essentially a test of the same conditions, the proposed requirement for dripleanness differs significantly from the proposed liquid retention requirement of 100 ml/1000 gallons. In order to meet the criteria for dripleanness a nozzle would require a maximum liquid

retention of 5 ml/1000 gallons. The scheduled implementation date of nozzles capable of attaining the 100 ml/1000 gallon criteria is April 2003. It is not reasonable to expect a nozzle to meet the driplless criteria when a 95% reduction in liquid retention over a nozzle not anticipated to be developed for years would be required. This point further develops the argument for using total spillage as the criteria for regulation.

Response

Liquid retention is not the same as spillage or dripllessness. Liquid retention emissions result from liquid gasoline evaporating from the nozzle and hose. Using total spillage as the only standard would ignore these significant emissions.

210. Comment by Tosco

The proposed reduction in total allowable spillage from 0.42 lbs/1000 gallons to 0.24 lbs/1000 gallons represents a 48% reduction in allowable spillage and will require the redevelopment of nozzles to eliminate all types of spills before and after fueling. As discussed above, this is not a reasonable assumption based upon the need for a 95% reduction in liquid retention over a nozzle not anticipated to be developed for years. The originally proposed reduction in spillage to 0.38 lbs/1000 gallons would allow 0.14 lbs/1000 gallons for spills occurring before and after fueling. This 0.14 lbs/1000 gallons equates to a liquid retention requirement of 84 ml/1000 gallons dispensed. Based upon these points, the regulation of total allowable spillage should be the originally proposed 0.38 lbs/1000 gallons and spillage should be the regulation that drives the development of new equipment.

Response

As stated in the response to comment 209, spillage is independent of liquid retention. The spillage, liquid retention (100 ml) and driplless requirements are technology forcing and will not be implemented until 2004 to allow time to develop new equipment. These standards will be evaluated during the technology review to be completed in April 2002 and may be adjusted if necessary in a future rulemaking.

211. Comment by Tosco

Section 4.6 states that "Phase II systems that cause underground storage tank (UST) pressure sufficient to cause fugitive emissions that exceed fifty percent (50%) of the maximum allowable emission factor shall not be certified." This statement is unclear and may be unnecessary based upon the pressure requirement of Section 4.6.4. Tosco suggests review of this statement and clarification of its meaning.

Response

The certification emission tests includes measurements of emissions at the

nozzle/vehicle interface, the vent pipe, the processor (if present) and fugitives. If the quantitation of fugitives exceeds 0.19 lbs/1000 gallons (50% of 0.38 lbs/1000 gallons), then the system shall not be certified. This is a separate requirement from the underground storage pressure criteria. No change made.

212. Comment by Tosco

The restriction of drain valves in spill containment boxes of vapor connectors will not offer reductions in emissions and could actually increase emissions because handpumps are not likely to be used to remove liquid spilled in the containment box. This argument was used by the SWRCB to oppose removal of drain valves for the product connectors and can logically be applied to boxes on the vapor connectors as well. A leakrate limit is proposed for all spill containment boxes and the potential for emissions will be minimal with the proposed tank pressure limits. Tosco suggest that removal of drain valves in spill containment boxes of vapor connectors not be a requirement of CP-201.

Response

Drain valves are an additional leak source which should be eliminated where possible. Drain valves are not necessary for the vapor spillboxes according to State Water Resources Control Board regulations. No change made.

213. Comment by Tosco

An emission limit of 0.15 lbs/1000 gallons for Phase I vapor recovery may not properly represent the proposed 98% efficiency criteria. The 7.6 lbs/1000 gallon emission factor is an estimate based upon a change in RVP and the average of studies conducted by ARB. Due to the fact that the 7.6 lbs/1000 gallon emission factor is an average of values, a system may be capable of operating with the required 98% efficiency with an emission slightly above 0.15 lbs/1000 gallons. The proposed Phase I 98% efficiency requirement will effectively reduce emissions and the emission limit of 0.15 lbs/1000 gallons does not offer a direct correlation to efficiency and should not be included as a requirement.

Response

Section 3.1 has been revised to clarify the Phase I emission factor. The 98% efficiency criteria is applicable to all Phase I systems. The 0.15 lbs/1000 gallons is applicable only to systems with processors.

214. Comment by Tosco

The proposed Phase II emission limit will pose the same problems as discussed above for Phase I. The proposed 95% efficiency requirement should be adopted, with the emission limit eliminated from the regulation.

Response

The Phase II standard has been modified to address vapor pressure differences between winter and summer fuel. As stated in section 4.1.1 of modified CP-201,

the standard is 95% and 0.38 lbs/1000 gallons when testing with summer fuel. The standard is 95% or 0.38 lbs/1000 gallons when testing with winter fuel.

215. Comment by Tosco

Table 4-1, "UST Pressure Criteria" should be modified to read, "Non-Excluded hours/day 0 + a minimum of 0.05" W.C." This currently could be misinterpreted to imply that the non-excluded hours have to be within 0.05" W.C. of atmospheric.

Response

This section has been modified to clarify this requirement. See also response to comment 188.

216. Comment by Tosco

Table 2-1 requires that A/L ratios for zero to be identified and dispensing prohibited by April 2001. This requirement should be eliminated for balance systems.

217. Comment by Veeder-Root

Table 2-1 requires that A/L ratios of zero be detected and dispensing prohibited as of April 2001. This requirement was not clear in the original document. Conversations with CARB staff indicate that this is a capability existing on presently certified assist systems and that the only new requirement would be recordkeeping and reporting of such a failure. We suggest adding a statement to the text to clarify this as an existing requirement and that it only applies to assist systems.

Response to 216 and 217

This requirement has been eliminated in Table 2-1, which provides the effective and operative dates for performance standards and specifications. Monitoring of A/L ratios is contained in the modified CP-201 ISD Appendix.

218. Comment by Veeder-Root

Table 2-1, regarding processor failure. It is not clear what action is required if a processor failure is identified. We suggest allowing a period of 6 days to effect repair. If the processor has failed and is not repaired or replaced within the 6-day period, then dispensing could be disabled.

Response

The requirement regarding processor failure has been removed from Table 2-1. Vapor processor monitoring requirements are contained in section 2.3 of the modified CP-201 ISD Appendix.

219. Comment by Veeder-Root

Section 3.5.3. Revised the first sentence to read: "...shall not exceed 0.17 CFH

at 2.0 inches H₂O.”

Response

The suggested change has been made.

220. Comment by Veeder-Root

Table 4-1 and Section 4.6, UST Pressure Criteria. The following revised Section 4.6 is suggested to identify when the pressure in the UST exceeded 2.0 inches for at least 7.5 minutes in a 30-minute period. It would provide timely identification of high pressures that might open the P/V valve and identify problem Phase I deliveries.

4.6 Underground Storage Tank Pressure Criteria

Phase II systems that cause underground storage tank (UST) pressure sufficient to cause fugitive emissions that exceed fifty percent (50%) of the maximum allowable emission factor shall not be certified. All USTs should operate at negative pressures on the average, once acceptable processor technology is available. Until such processor technology is available, the following criteria shall apply to all Phase II systems.

4.6.1 The pressure in the UST shall be monitored to produce a pressure reading at least once per minute. These data shall be used to provide a rapid response test designed to detect periods of high pressure in the tank that could result from problems with Stage I vapor recovery operation during delivery and monitoring to detect problems with State II vapor recovery, excluding times when deliveries are taking place.

4.6.2 To test for period of high pressure in the UST, perform the following test. On a rolling basis, compute the 75th percentile of the pressure readings (both positive and negative) over a 30-minute period. If the 75th percentile of the pressure readings for any 30-minute period exceeds 2.0 inches H₂O, issue an audible and visual alarm. This results indicates a problem with pressure in the tank in that it is approaching the limit of the P/V valve and could cause that valve to open, venting vapors to the atmosphere. This test could also detect a problem with a delivery and Stage I vapor recovery.

Response

The comment pertains to ISD pressure monitoring of in-use systems, not certification requirements. Some of the suggested language has been incorporated in the CP-201 ISD Appendix, section 2.2.1.

221. Comment by Veeder-Root

Suggest the following language regarding Phase I pressure data exclusion:

4.6.3 *For the purpose of this section, the UST pressure data shall be evaluated so as to exclude the period(s) during which UST pressure changes directly attributable to Phase I (delivery) operations occur. The criteria used to identify UST pressure changes attributable to Phase I operations shall be determined during the certification process. One approach would be to identify delivery periods using an automatic tank gauge and exclude those periods from analysis except as described in 4.6.2 above.*

Using an automatic tank gauge to accurately identify the delivery periods seems preferable to excluding an hour of data when a delivery occurs. A delivery could easily span across the beginning of an hour, resulting in the loss of two hours of data if they are analyzed on an hourly basis. Multiple deliveries on a day could result in the loss of considerable data.

Response

Not all service stations have automatic tank gauging. Other methods are acceptable to identify delivery periods. No change made.

222. Comment by Veeder-Root

Suggest revision of 4.6.4 as follows:

4.6.4 *Using all pressure data excluding the delivery periods (both positive and negative pressures), calculate the 95th percentile of the pressure data for each 24-hour period. This is referred to as the daily high pressure. Also determine the number of pressure readings in the non-excluded period and the number of pressure readings in the non-excluded period when the pressure exceeds +0.25 inch H₂O.*

CP-201 suggests averaging only the positive pressure readings during the non-excluded period. Basing the computation on positive readings only is not recommended for the following reasons. Hours that had no positive readings would be excluded from consideration. An hour that had only one or a few positive readings would have the average computed over only a short period. This could result in a “hourly average” based on only seconds or a few minutes of data when the pressure was positive. In an extreme case, the pressure in the UST could be negative for all but 3 minutes in a month, when it was 0.30 inch H₂O. This clearly would not result in significant fugitive emissions, yet the proposed criterion of hourly averages of positive pressures would fail. An alternative approach would be to replace negative pressure values with zero and include them in averaging along with the positive pressures.

Calculating the average based only on positive pressure data could be inconsistent with the integrity test proposed in Section 4.6.3. If the UST operated at a negative pressure for all the non-excluded hours, there would be either no hourly averages to use, or, if negative pressures were replaced with

zero, all of the hourly averages would be zero resulting a failed test for a non-leaking system.

Using the 95th percentile of all of the pressure data identifies whether the pressure was positive for a significant amount of time and the pressure was exceeded at most 5% of the non-excluded time. Using percentiles is consistent with the Staff report, where the use of percentiles or percentage of time that the pressure was negative was reported (p.56 and p.62).

Response

The comment pertains to ISD pressure monitoring of in-use systems, not certification requirements. Some of the suggested language has been incorporated in the CP-201 ISD Appendix, section 2.2.1.

223. Comment by Veeder-Root

Suggest new section 4.6.5 as follows:

4.6.5 A daily test to ensure the integrity of the UST shall be performed. This shall be based on determining that the daily average pressure is less than or equal to -0.25 inch H₂O. Alternatively, the vendor may develop a daily tightness test that allows higher operating pressures but still tests the integrity of the UST on a daily basis.

This is consistent with the staff report (pp.107-108) that states that "...the UST must operate a negative pressure most of the time." Operating at an average pressure of less than -0.25 inch H₂O will likely require a processor. To avoid requiring a processor, an alternative test could be developed which could allow the system to operate at higher average pressures. A practical pressure sensor will exhibit an overall accuracy over the operating conditions of about ± 0.20 inch H₂O. All pressure tests and thresholds should acknowledge this degree of inaccuracy. Thus, the proposed integrity test of some hourly average falling outside the range of 0.00 ± 0.05 inch H₂O is not recommended. Also, as stated on p. 56 of the staff report, "... the balance system operates at atmospheric pressure most of the time..." In other words, a tight balance system could fail the test.

Response

The comment pertains to ISD pressure monitoring of in-use systems, not certification requirements. Some of the suggested language has been incorporated in the CP-201 ISD Appendix, section 2.2.1.

224. Comment by Veeder-Root

Suggest section 4.6.6 as follows:

4.6.6 A rolling 30-day average of the daily high pressures as defined in 4.6.4

above shall be calculated each day by averaging the most current daily value with the appropriate values for the previous 29 days. In addition, the proportion of pressure readings in the non-excluded periods that exceed +0.25 shall be determined for each rolling window of 30 days. These 30-day rolling average results shall meet the following criteria:

The rolling 30-day average of the daily high pressures as defined in 4.6.4 shall not exceed 1.5 inches H₂O.

The proportion of pressure readings in the non-excluded periods that exceed +0.25 inch H₂O shall not exceed 10%.

These two requirements should ensure that the pressure in the UST is less than +0.25 inch at least 90% of the time and is less than 1.5 inch H₂O at least 95% of the time. Together these requirements should make fugitive emissions quite small.

Response

The comment pertains to ISD pressure monitoring of in-use systems, not certification requirements. Some of the suggested language has been incorporated in the CP-201 ISD Appendix, section 2.2.1.

225. Comment by Veeder-Root

A new section 4.6.7 is suggested as follows:

4.6.7 A daily test for a zero A/L ratio shall be conducted. For each hose, as many A/L rations as practical shall be calculated. The 50th percentile (median) of the A/L ratios shall be calculated on a daily basis. On a daily basis and audible and visual alarm shall be issued for any hose if the 50th percentile of the A/L rations is less than 50% (half) of the certified A/L ratio. If the condition persists for 6 days, dispensing from that hose shall be disabled.

Response

The comment pertains to ISD pressure monitoring of in-use systems, not certification requirements. The suggested approach was considered in development of the CP-201 ISD Appendix, section 2.1.1.

226. Comment by Veeder-Root

Revise Table 5-1 and sections 5.2.1 and 5.2.2 to add allowances for pressure drops for airflow sensors. Add an air-flow sensor item with 0.20 inch H₂O at 60 CFH to allow a reasonable cost air flow sensor technology.

Add an allowance for a 3-inch airflow sensor of +0.05 inch H₂O when the sensor is mounted in the common return line. This would result in a total allowance of 0.10 inch H₂O pressure drop in the Phase II riser to the tank.

Add an allowance for 1-inch airflow sensor of 0.20 inch H₂O for a total of 0.55 inch H₂O from nozzle to UST at 60 CFH. For a 3-inch airflow sensor, add an allowance of 0.05 inch H₂O for a total of 0.40 inch H₂O from nozzle to UST at a flow rate of 60 CFH.

Add an allowance for 1-inch airflow sensor of 0.33 inch H₂O for a total of 0.95 inch H₂O at 80 CFH from the nozzle to the UST. For a 3-inch airflow sensor, add an allowance of 0.08 inch of H₂O for a total of 0.70 inch H₂O) from nozzle to UST at a flow rate of 80 CFH.

Response

The need for pressure drop allowances for flow sensors will be evaluated during the ISD pilot program.

227. Comment by Veeder-Root

Section 13.3.4, Performance Tests during Operational Test. The 3% change seems an excessively tight requirement. If the system still meets the overall requirements, a 3% change is not significant.

Response

We agree. The section, now 13.3.5, has removed the 3% change and has been revised to allow the Executive Officer to extend or terminate the operational test if performance test results, when extrapolated through the end of the warranty period, show a degradation in performance.

228. Comment by Veeder-Root

Section 20.1.2. There appears to be a missing word “expire”?, so the last of the paragraph should read: “...or part shall expire at the end of the...”

Response

We agree that a word was missing. The missing word, “terminate” has been added in the revised section 19.1.2.

229. Comment by VST

Section 4.6, Underground Storage Tank Pressure Limits. VST questions whether a non-excluded hours differential of 0+0.05 in H₂O would sufficiently identify a leak condition. Any system, which operates at a positive pressure, could only have a verifiable leak rate with a verifiable condition of tightness. A system which operates at a pressure at or above atmospheric will require a certain frequency of leak decay testing to ensure compliance. The frequency of leak decay testing could be determined during certification testing and would be part of normal maintenance of the system.

Response

The check for continued operation at atmospheric pressure will identify gross leaks through use of pressure monitoring without field testing. Tight systems show pressure variations, especially during and immediately after Phase I deliveries. If pressure monitoring shows that the system remains at atmospheric pressure for several hours, this would trigger a pressure decay test.

230. Comment by VST

An ISD for a balance system should make any liquid removal standard redundant, as any liquid blockage would be identified. VST proposes that any balance system should have ISD if their ISD system is certified by April, 2001, and any liquid removal systems should be tested using ISD for the six-month period. Measurement of liquid removal in a field installation is difficult to do with any accuracy, and ISD would eliminate the need for any field-testing to ensure compliance.

Response

We agree that an ISD system for a balance system should identify a blocked hose, but ISD systems are not required for new installations until April 2003. A liquid removal standard is necessary for hose manufacturers to design their equipment. TP-201.6 has been used successfully for many years to determine the liquid removal through field tests.

231. Comment by VST

Section 5.2, Component pressure drop limits. Sometimes there can be end effects when trying to measure component pressure drops, that is, the pressure drop measured for an individual component may differ from the pressure drop found for the component when it is assembled with other components. VST recommends that standardized fixtures be developed for the testing so that the results can be duplicated by anyone, and that the testing method should duplicate the flow direct of the component when in use.

Response

We agree and will consider such test fixture requirements in the 2002 technology review.

232. Comment by VST

Section 6.1.3. Limiting allowed A/L ratios seems to be a fairly arbitrary standard. It should be left up to the vapor recovery system applicant to demonstrate an acceptable A/L range during certification testing.

Response

A/L greater than 1.0 means a larger volume of air-vapor mixture is returned to the underground vapor space than the volume of fuel dispensed. A net increase in volume will normally lead to increases in pressure with corresponding pressure-related fugitive emissions. Systems which desire to be certified with

higher A/L limits may apply as an innovative system as provided by section 2.3 of CP-201.

233. Comment by Wayne

The site throughput of a minimum 200,000 gallons per month will make it a hardship on the 40 applicants for certification. Although there is wording that says the Executive Officer may, for good cause, grant approval of a test station with a lower throughput, there are no guidelines in making this decision. It should state a range of between 100,000 and 200,000 gallons throughput per month if less than 200,000 will be acceptable.

Response

We have modified the minimum throughput to 150,000 gallons per month with a provision for 100,000 gallons per month in circumstances approved by the Executive Officer.

234. Comment by Wayne

The emission factor needs to be addressed for both winter and summer fuels. Testing will be taking place year round and will most likely not pass the 0.38 lbs/1000 gallons limit in winter testing. An equivalent factor needs to be allowed for winter fuel.

Response

The Phase II standard has been modified to address vapor pressure differences between winter and summer fuel. As stated in section 4.1.1 of modified CP-201, the standard is 95% and 0.38 lbs/1000 gallons when testing with summer fuel. The standard is 95% or 0.38 lbs/1000 gallons when testing with winter fuel.

235. Comment by Wayne

The balance dispenser should be made a component that once tested with one hose handling system, would be approved for any hose hanging system that may be approved through other certifications. The balance piping in the dispenser is the only thing that effects the backpressure of the system and, if it meets certification requirements, should be approved for all approved hose hanging applications.

Response

The balance dispenser vapor piping has been added to the list of non-system specific components contained in Table 16-2 (originally noticed as Table 17-2). This will allow the dispenser vapor piping to be certified for use on multiple systems, without full certification tests for each system.

Test Procedures

General test procedure comments are provided below, followed by comments pertinent to specific test procedures.

General Test Procedure

236. Comment by San Diego

The District appreciates ARB's commitment to work with the air districts to study the efficacy of a more rigorous pressure decay/leak test procedures than the current CARB-approved 2-inch wcg test. ARB should require the certification test site be pressure decay/leak tested before the 180 day operational test with helium leak detection, or the 10-inch wcg pressure decay test/leak test with soap bubble checks of accessible fittings, and that all detected leaks be corrected. This should be repeated after the 180-day operational test, just prior to the certification test of emissions. Any leaks that appear over the course of the operational test should be recorded and documented in the certification application evaluation. Any leaks should again be corrected to ensure that fugitive emissions are kept to a minimum during the emissions testing. At least a 10-inch wcg pressure decay test should be run after the emissions testing to ensure that no new leaks developed that may have affected the emissions test outcome. Again, any leaks that developed should be recorded and documented in the certification evaluation. The leaks detected and repair information should be included when evaluating the system reliability and the validity of the certification tests.

Response

We look forward to working with the districts to evaluate the various pressure decay test options appropriate for both certification and compliance testing. Whichever method is chosen, we will continue our practice of conducting regular pressure decay tests throughout the certification test period. In addition, pressure monitoring is required at all certification test sites, which will aid in the evaluation of pressure integrity.

237. Comment by San Diego

There have been major problems with the quality and durability of existing vapor recovery systems. ARB staff must work with the air districts to evaluate and implement more rigorous field test procedures to ensure quality and reliable installations of certified systems.

Response

We agree and believe that the new standards and more rigorous certification testing will improve the quality and durability of vapor recovery systems. We are willing to work with the districts to improve the field test procedures necessary to ensure that the new standards are met in installed systems.

238. Comment by San Diego

The list of approved procedures in the certification Executive Orders should be as complete as possible. However, ARB should acknowledge that not every

installation inspection/compliance verification measurement will be covered by an ARB test procedure. Therefore, the language of the Executive Orders should not limit districts to only those procedures listed, since this would make some requirements of the certification unenforceable or at least debatable by some contractors. ARB should work with CAPCOA (Enforcement Managers) on standard language to include in the certifications that makes it clear that districts can use their enforcement discretion to determine compliance based on approved test procedures, district inspection procedures or any other credible evidence.

Response

We agree that compliance with vapor recovery requirements should be determined using approved test procedures and district inspection procedures. Section 14.6 of CP-201 provides a mechanism for districts to obtain ARB approval of their inspection procedures that identify vapor recovery system defects. If districts find that elements of the Executive Orders (EO) are unenforceable, this should be brought to the attention of ARB staff during the draft EO review, so that modifications can be made before the EO is issued. If enforcement issues arise after the EO is issued, ARB staff will work with the districts to define a consistent approach to verifying compliance.

239. Comment by San Diego

ARB conducted a survey in the Sacramento area and found nearly 90% of the service stations could not pass ARB's 2-inch wcg pressure decay test due to loose plumbing and leaking fittings and components, including nozzles. The Santa Barbara air district found systems failing because the plumbing, assembled and tested with the 2-inch test, would not hold together for more than a few weeks in 13 out of 14 cases. In contrast, the certification test site held together for more than 90 days. However, these sites had plumbing installed using helium detection at 28 to 42 inches wcg. These more rigorous procedures were specified by the equipment manufacturers to make sure the plumbing would stay tight throughout the operational test period. At the two test sites used for the ARB/Aerovironment study the plumbing came loose before the tests could produce scientifically valid data on vent emissions.

ARB must work with the air districts to evaluate and implement more rigorous test procedures to ensure certified system piping is properly installed and will remain reliably leak-free. For example, the approach used by fire jurisdictions and industry includes leak tests to identify weaknesses that cause piping or fittings to separate due to repeated stresses, expansions, etc. Although the staff report states on page 53 that it is very difficult to maintain a leak-free vapor storage space with the equipment currently available, there are no serious problems with natural gas lines and appliances meeting the gas-tight standards of fire jurisdictions. At the least, more rigorous procedures would reduce the extent and frequency of vapor recovery system plumbing failures that have been

observed.

Response

ARB, in conjunction with CAPCOA, has initiated a field study to evaluate various test methods to determine compliance with pressure integrity requirements. It should be pointed out that the current 2-inch test is to be used to determine compliance with the pressure integrity standard, not necessarily as the design condition for the underground vapor space.

The comparison of vapor recovery pressure integrity with natural gas systems is flawed. Natural gas lines are permanently connected to appliances and not routinely handled by consumers every time fuel is needed. Leaks will occur due to equipment handling for both Phase I and Phase II deliveries. One of the objectives of the new in-station diagnostics is to detect when pressure integrity failures occur so that leaks can be located and fixed immediately.

240. Comment by San Diego

ARB did not propose revisions to TP-201.4, "Determination of Dynamic Pressure Performance of Vapor Recovery Systems of Dispensing Facilities." The District expects that this procedure will continue to apply to currently certified Phase II systems and will apply in the future to EVR certified systems. However, this procedure, when used in conjunction with TP-201.6 appears to allow, if not require, that vapor hoses be drained of any retained liquid prior to conducting the test. This aspect does not allow a realistic picture of how Phase II systems are actually performing in the field, nor how effectively the systems are clearing liquid in the vapor hoses. (San Diego provided additional detail on how the test methods could be improved in their comments.)

Response

TP-201.4 and TP-201.6 are not part of the proposed vapor recovery amendments. These two test procedures were recently amended as a result of a June 1999 Board action. These test procedures may be re-evaluated in the future after analysis of data from field audits of balance systems conducted in fall of 1999.

241. Comment by Tosco

The classification of individual testing procedures as certification or compliance tests is not clear.

Response

For vapor recovery systems some test procedures are adopted as both certification tests and compliance tests. Test methods specified in title 17, California Code of Regulations (CCR), section 94011, are used in certification. Test methods specified in title 17, CCR, sections 94100-94162, are available for districts to use in compliance testing. Compliance tests appropriate for each

system will be specified in the system Executive Orders. Through GDF permitting, districts have authority to specify testing requirements, including testing frequency.

242. Comment by Veeder-Root

What is TP-201.3? TP-201.3A was marked for repeal. This reference occurs several times throughout the certification procedure.

Response

TP-201.3, "Determination of 2 Inch WC Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities" is an adopted test procedure used to determine pressure integrity of the underground vapor space. It is not being revised in this rulemaking.

TP-201.1 Volumetric Efficiency for Phase I Systems

243. Comment by Hirt

TP-201.1 and TP-201.1A do not contain requirements or criteria to determine fugitive emissions during Stage 1 activities. Vapor can and will escape from any vapor containing space including the UST ullage, vapor valves, coaxial dispensing hoses, Stage I fill and vapor adapter caps, spill valves, Stage I fittings, Stage I hoses, and the cargo tank, not just through the vent pipe. It is our experience that most Stage I VR hoses are not subject to periodic leak test requirements. The fact that half of the vapor at a GDF is to be controlled by the Stage I system, dictates the need to accurately measure and monitor the Stage I operation is as important as the need to measure and monitor Stage II. This need will only intensify if the efficiency goal were to be raised above 95%.

Response

Fugitive emissions from different source points are a concern with the current TP-201.1 and will be addressed after further research. As amended in this rulemaking TP-201.1 identifies components as either Phase I or Phase II. For instance, coaxial dispensing hoses are classified as Phase II. All Phase I vapor recovery hoses found on cargo tanks are subject to annual leak decay requirements as specified in CP-204. ARB inspects numerous cargo tanks and test facilities each year. It is ARB's experience that all cargo tank vapor and product hoses are tested on an annual basis. No changes made.

244. Comment by San Diego

TP-201.1 calls for a barometer that is accurate to 5 millimeters of mercury but only requires a pressure gauge of only 0 to 1-inch wcg at the outlet of the rotary meter. The procedure should specify a barometer that measures in inches of water column gauge, readable to within ± 1 inch. Technology has advanced since the original test procedure was developed in the 1970's. Also, the requirement for a pressure gauge at the outlet of the rotary meter could be

eliminated. One-inch wcg of a typical atmospheric pressure of 404 inches wcg isn't going to have a significant impact on the measurement. Also, in Equation 9.2, 29.51 inches of mercury is a more appropriate correction value than 29.92 since few stations are located at sea level.

Response

Pressure measuring devices are used at several locations in conducting TP-201.1, including the inlet side of the PV valve meter, the inlet of the vapor return meter, and the inlet to the cargo tank. The gauge used on the cargo tank is used to manually observe if the cargo tank vapor valves are functioning normally. This may be verified by a vacuum reading on the gauge. The gauges used at the PV and vapor return points are used for pressure correction factors. To the best of our knowledge, there has never been a requirement to place a gauge at the outlet of the rotary meter, only to place a gauge in line with the inlet and outlet to measure the differential pressure or pressure drop across the meter. Although +/- 1.00 inch W.C. is specified, gauges with a higher resolution and accuracy may also be acceptable. The value of 29.92 inches of mercury is a scientific standard proven over many years of research. Any other value would have to be adjusted for the elevation at each test site. The value of 5 millimeters of mercury has been amended to 1 millimeter to reflect the most current and most common equipment available today.

245. Comment by San Diego

TP-201.1 does not contain a provision for checking the cargo tank dome covers to be sure they are closed and free of leaks. There should be provisions for ensuring the truck cargo tank and vapor lines are gas-tight. If the truck has a loose dome cover or other major leak, it will affect the Phase I emissions test result. Also, there should be a provision for checking the cargo tank valves if the Phase I system fails.

Response

We agree that faulty cargo tank components could substantially affect the outcome of an efficiency test. For safety reasons, inspectors or test officials are not permitted to climb on top of a cargo tank to check for leaking components. As found in TP-201.1, Section 3.2 identifies that cargo tanks must meet the year-round (daily) standards as identified in CP-204. This test procedure includes every component associated with a cargo tank except for the hoses. Should a cargo tank be suspected of affecting a test, the tank is followed back to the loading rack and tested for the year-round requirements.

246. Comment by San Diego

Subsection 7.4 of TP-201.1 calls for monitoring emissions for an hour after the delivery and including those emissions. Provisions should be added for measuring the initial storage tank liquid temperatures and volatilities (RVPs), the liquid temperatures and RVPs of the delivered gasolines and the final bulk liquid

temperature. These factors should be considered in the analysis of whether the test was representative and the systems has met the certification standards. A properly installed, gas-tight Phase I system with a P/V valve will likely pass since typically there is a higher initial liquid temperature in the storage tank compared to the cargo tank. However, conditions can occur where the delivered fuel has a higher volatility than the liquid in the underground storage tank. A Phase I system might fail under these conditions. The system could vent due to vapor growth and not due to the design of the Phase I equipment, unless the system is gas-tight and is equipped with a vapor processor.

Response

Current TP-201.1 test methods do not account for RVP or fuel temperatures during deliveries. While these parameters may be considered in developing new and improved test methods and procedures, the test procedure must not compensate for variables that will be encountered during certification testing and when the system is installed after certification. The design of the Phase I equipment must account for these "real-world" variables.

TP-201.1A Emission Factor For Phase I Systems

247. Comment by Hirt

TP-201.1 and TP-201.1A do not contain requirements or criteria to determine fugitive emissions during Stage 1 activities. Vapor can and will escape from any vapor containing space including the UST ullage, vapor valves, coaxial dispensing hoses, Stage I fill and vapor adapter caps, spill valves, State I fittings, State I hoses, and the cargo tank, not just through the vent pipe. It is our experience that most Stage I VR hoses are not subject to periodic leak test requirements. The fact that half of the vapor at a GDF is to be controlled by the State I system, dictates the need to accurately measure and monitor the Stage I operation is as important as the need to measure and monitor Stage II. This need will only intensify if the efficiency goal were to be raised above 95%.

Response

See response to comment 243.

248. Comment by San Diego

TP-201.1A, page 6, states that filters can be used so that the NDIR measures only methane to obtain non-methane concentrations. How is that possible since the infrared absorption range is overlapped by the absorption ranges of other hydrocarbon molecules in the gas stream? The District has always found it necessary to do a separate gas chromatographic analysis to determine non-methane hydrocarbons.

Response

At present, test personnel are experimenting with a FID and NDIR backup used

to measure hydrocarbon emissions at the processor. A FID is presumably more accurate than an NDIR at lower concentrations and the NDIR will serve as a backup in the case that the concentration goes beyond the FID capacity. At present, not enough experimentation has performed on processor-based systems and changes to TP-201.1A will not be made at this time. In addition, gasoline speciation data do not indicate detectable levels of methane in gasoline vapors for current California fuels. No changes made.

249. Comment by San Diego

In TP-201.1, there is no requirement to leak check the sample lines or test equipment in all but one of the proposed procedures. Such leak checks should be required in each test procedure.

Response

Section 5.5 of TP-201.1 provides for a combustible gas detector to check for vapor leaks occurring during the gasoline bulk drop. Leak checks of the sample lines and test equipment are recommended, but not required. No change made.

250. Comment by San Diego

TP-201.1A, Section 5.4 states that failure to return 100% of the sample will bias the end results. All test procedures should be analyzed to determine potential impacts on the system being tested. The flame ionization detector (FID) and mass flow controller (MFC) dilution systems used by the District samples at a rate of 1 liter per minute of which 990 milliliters was returned unaltered to the vapor return line. Only 10 milliliters was drawn into the detector dilution systems. At 10 mils/minute, the total consumed sample in a typical eight-hour sample period would be 4600 mils. Compared to the typical manifolded vapor space (~57,000,000 mls) of 3 10,000 gallon tanks containing 15,000 gallons of gasoline, 4600 ml of sample will not have a measurable impact.

Response

We agree that the approach suggested is an alternative to FTIR that should be further investigated and plan to do so.

251. Comment by San Diego

The most accurate instruments used and the most frequently found in the literature are gas chromatography (gc's) or a combination of gc and mass spectrometry (ms). The accuracy of NDIRs may be significantly improved by diluting the sample to evaporate entrained droplets. A determination should be made as to what impact returning the diluted sample versus expelling it would have on system performance. Like the District's FID-MFC system, ARB should develop correction charts to account for olefins. If the olefin content does not change significantly from the reference gasoline to the gasolines in the field, when temperatures are controlled and sample lines and instruments are leak checked with soap solution, it might be reasonable to expect reliable results.

Response

Use of GC-MS is not practicable for this test procedure and the continuous analyzers cited have been found to work satisfactorily in measurement of total hydrocarbons. No change made.

252. Comment by San Diego

Section 5. There are now flow meters, such as micromotion meters, available that are reported to be more accurate than rotary meters. Alternative meters should be investigated and allowed if accuracy and precision are better than required for rotary meters.

Response

We concur that alternative flowmeters and flowmeter technology may be investigated and allowed where appropriate. Section 5.1 allows volume meters other than rotary meters if the minimum specifications are met. If other meters are desired, alternative equipment must be approved in advance by the ARB Executive Officer as provided in section 13 of TP-201.1A.

254. Comment by San Diego

Subsection 6.3. The procedure should be clarified by adding a requirement to reinstall the pressure/vacuum valve. In addition, language should be added specifying that the leak integrity test be conducted with the test equipment in place.

Response

This comment appears to be directed toward TP-201.1, rather than TP-201.1A. No leak integrity test is required to be conducted with TP-201.1. No change made.

TP-201.2 Emission Factor for Phase II Systems

255. Comment by San Diego

The test procedure should ensure that the certification test measures all emissions that occur during testing. This requires that measurements be made at all known emission points, and that all emission points be identified. The certification test facility must be free of all fugitive leaks.

Response

TP-201.2 provides direct measurement of emissions at the nozzle/vehicle interface, the underground storage tank vent and the vapor processor (if applicable). The test station must pass the pressure integrity test using TP-201.3, which allows for some leaks. Fugitive emissions from the allowable leaks are quantitated using TP-201.2F, as direct measurement of fugitives is not feasible.

256. Comment by TRI

Although the proposed TP-201.2 has eliminated the currently used Test Point 2 inside the dispenser, the new language provides an option for CARB to continue the requirement for flow rate and concentration data, at their option, while also requiring that the reinjected sample pressure, temperature or concentration be unchanged. In the presence of large temperature differences between UST and the vehicle tank, the latter will be impossible to achieve.

Response

Test point 2 has been returned to the revised TP-201.2, due to the reinstatement of the Phase II efficiency standard. The sample is taken from the vapor return line inside the dispenser, then returned to the vapor return line after analysis to minimize disruption to system operation. We have conducted this test for many years and have not found problems with large temperature differences when taking the sample at this location.

257. Comment by VST

Reference to a specific type of flowmeter should be deleted, only indicate performance requirements. A turbine meter, in particular, may not be suitable for measuring a flow containing organic vapors.

Response

Alternative equipment that meets the specifications in the test procedure may be used upon approval of the Executive Officer (section 14 of modified TP-201.2).

TP-201.2A Determination of Vehicle Matrix for Phase II Systems

258. Comment by Tokheim

TP-201.2A has been modified to reflect the change from a 100-car to a 200-car matrix for certification testing. Adding additional cars will do little to assure reliability of equipment. The 100-car test is adequate to assure compliance to regulations. If the original 100-car test does not reflect a good cross-section of typical vehicles, then we should revisit the original list of vehicles on the 100-car test and update the list.

Response

We disagree. The vehicle matrix is defined to represent the millions of vehicles that make up the California vehicle population. Testing 200 cars is still a very tiny sample of the types of vehicles present on the road, yet doubling the number of vehicles should help identify any system difficulties in achieving compliance.

TP-201.2B, Appendix 1 Pressure and Vacuum Performance Specifications for Pressure/Vacuum Vent Valves

259. Comment by San Diego

The last sentence in Section 1.1 states that the “.. test equipment was not intended for use in an environment containing gasoline vapors.” The District interprets this to mean that P/V valves can only be tested away from a GDF. This would essentially preclude the use of this test for startup and compliance inspections. This statement should be deleted.

Response

The suggested change has been made.

260. Comment by San Diego

Section 5.7 specifies a stopwatch accurate to within 0.2 seconds. It is unclear whether the reference is to accuracy or minimum display resolution of the stopwatch. If the intent is for accuracy, a time period over which this requirement is to be met should be specified. If the intent is for minimum resolution of the stopwatch, the Section should be revised accordingly.

Response

It is more confusing to describe in terms of resolution, even though that is the intent of the stopwatch requirement. For example, a resolution of 0.1 seconds is better, but is a lower value than the “0.2 second minimum”. No change made.

261. Comment by San Diego

Section 6.1.1 references “Figure xx”, Section 7.5.1 references “Figure xx”, Section 7.6.1 references “Figure xx”. The missing figures should be provided and a reasonable time allowed for review and comment.

Response

The figures were supplied and available for comment from September 29 to October 27, 2000.

TP-201.2C Spillage from Phase II Systems

262. Comment by San Diego

Section 1.1 states the test procedure is to determine compliance with the allowable mass emission factor for spillage. ARB should clarify how the definition of a “liquid leak” (in excess of 3 drops per minute) in proposed D-200, “Definitions for Vapor Recovery Procedures” fits with the proposed spillage factor. Will both standards apply or does one exclude the other?

Response

The spillage standards must be met to certify Phase II vapor recovery systems. The prohibition of liquid leaks for gasoline marketing operations is also present in some district rules. The applicable standards do not exclude each other.

263. Comment by San Diego

Section 1.1 refers to “the allowable mass emission factor” for spillage. Although this mass emission factor is found in CP-201, it would be helpful to specify it in TP-201.2C, or be specific as to the section (i.e. 4.3) in CP-201 where it can be found.

Response

We have learned from previous experience with TP-201.4 that keeping the standards and test procedures separate is best. When the standards are revised in CP-201, correct enforcement of the standard depends on whether the system is a new installation or is subject to the previous standard by virtue of the 4-year clock. No change made.

264. Comment by San Diego

Section 2.1 requires the vapor recovery nozzles and associated hanging hardware be inspected and verified to be in good working order, as specified in the California Health & Safety Code section 41960.2 (d) and (e). For determining compliance, TP-201.2C should be performed on nozzles as found in operation. If certain other tests of nozzles and hanging hardware are to be required, they should be specified.

Response

Section 2.1 has been modified to reference title 17, CCR, section 94006 in place of the Health and Safety Code sections mentioned above. This section identifies taggable system defects. The intent of this section is to ensure dispensing points with taggable defects are identified before conducting the spillage test procedure. No change made.

265. Comment by San Diego

TP-201.2D includes this same language regarding inspecting and verifying nozzles are in good working order, but references CCR 94006. Although either H&SC 41960.2 or CCR 94006 serve the purpose of Section 2.1, consistent references throughout the test procedures would be helpful.

Response

As indicated in the response to comment 264, both methods now reference CCR 94006. See the response to comment 264 for the explanation of the purpose for the section and its cross reference. No change made.

266. Comment by San Diego

Section 3, Biases and Interferences, consists of six subsections addressing individual biases to the test procedure. This discussion raises concerns regarding the accuracy and repeatability of the procedure. If ARB has sufficient data to state that the test is repeatable and accurate, it should state this as a preface to the discussion of these biases. ARB should also consider describing

these biases as cautions to the tester.

Response

Section 3 alerts the tester of circumstances that could bias the test results. The listing of biases improves the likelihood that the test will be conducted on a consistent basis. No change was made.

267. Comment by San Diego

Section 3.1 states that dirt or inadequately cleaned absorbent could affect the spill area. The intent of this comment is unclear. Does this mean that the area should be cleaned before testing or tested as found? There is no comment as to how to reduce this bias. If this is an informational statement, but will have no impact on how the data is handled, the statement should be deleted.

Response

The areas should be tested as found. The identification of different types of spill surfaces is important in determining which surfaces should undergo test calibration. No change made.

268. Comment by San Diego

Section 3.5 states that the specific weight that typifies the gasoline being dispensed should be used if it is different from 6.28 pounds per gallon. Does ARB intend that gasoline will have to be tested for specific weight at every site prior to conducting this test? TP-201.2.C specifies that if the gasoline being dispensed had a different specific weight, it should be used. TP-201.2E makes no provision for this. The District would prefer that neither test procedure require the use of individual gasoline densities. The single representative value used to set the standard should be used throughout the test procedures.

Response

We agree, a change has been made to use one gasoline density.

269. Comment by San Diego

Section 4.1 demonstrates the annual air quality impact in California attributable to a single drop of gasoline spilled during each refueling event. While this background information is interesting, it is of limited value in a test procedure. It should be relocated to the staff report.

Response

We agree. This demonstration has been removed from the test procedure.

270. Comment by San Diego

Section 5.10 specifies a stopwatch accurate to within 0.2 seconds to measure the dispensing rate. Is the intent to specify accuracy or minimum display resolution? If accuracy, a time period over which this requirement is to be met

should be specified. If the intent is for minimum resolution of the stopwatch, this section should be revised accordingly.

Response

It is more confusing to describe in terms of resolution, even though that is the intent of the stopwatch requirement. For example, a resolution of 0.1 seconds is better, but is a lower value than the “0.2 second minimum”. No change made.

271. Comment by San Diego

Section 6.1.2 specifies the spills are to be from a height of 30 inches (± 2 inches). The 30 inch height requirement is presumed to be representative of a vehicle fill pipe. However, this may result in considerable splashing and not all the test volumes being poured will be included in the spill characterization. Has ARB determined that this test is repeatable?

Response

Our experience indicates that the test is repeatable if the rate of pouring is consistent (see section 3.6).

272. Comment by San Diego

Section 6.1.3 [sic; should be 6.1.5] allows the use of an equation to express spill volume as a function of spill area for special circumstances, if it is approved in writing by ARB. It would be helpful if ARB could provide an example or generic equation with the test procedure.

Response

The form of the equation may vary with each testing situation. We do not want to confuse the issue by suggesting an equation that may not be appropriate. No change made.

273. Comment by San Diego

Section 6.2.1 requires that the individual gasoline volumes be poured from a 100 ml graduated cylinder into the appropriate graduated cylinder before pouring onto the pavement. Why must the volumes be poured from one cylinder to another? Can a 5 ml measured volume be poured directly onto the pavement?

Response

The suggested pouring pattern is based on our field experience with this method, where it is awkward to pour from a large volume container into a small graduated cylinder. It is acceptable to pour the 5-ml volume directly on the pavement.

274. Comment by San Diego

Section 6.2.3 addresses pouring the gasoline on the pavement in as close to a circular or elliptical shape as possible. It would be helpful to specify a pour rate,

or a minimum time interval to achieve each pour volume, rather than state “carefully pour”.

Response

Based on our field test experience, the existing language is sufficient. The tester will quickly learn the desired procedure after a few practice runs. No change made.

275. Comment by San Diego

Section 6.3.5 says to use an absorbent substance to clean up the 5-ml, 25-ml, and 50-ml pours. The 10-ml pour should be included in this list.

Response

The suggested change was made.

276. Comment by San Diego

Section 7.2 says to use the stopwatch to determine the dispensing rate. It is unclear why the dispensing rate is needed for this test procedure. If it is simply to ensure that the nozzle is operating within the allowable dispensing rate, that requirement is already handled through other test procedures and/or executive orders. The procedure could simply state the dispensing rates must be in the required range.

Response

San Diego is correct in that the dispensing rate information is not necessary to determine compliance with the spillage standard. However, this test procedure is used for certification and spill surveys, where correlation of spills with dispensing rate is important. No change made.

277. Comment by San Diego

Section 7.4 allows the use of paper for the outline of a spill if prior approval is obtained from ARB. Can ARB generally approve the use of a specific testing paper by a district once rather than each time and for each site?

Response

Yes, we can provide a general approval for spillage testing paper.

278. Comment by San Diego

Section 7.8.2 requires recording the nozzle orientation in the vehicle, using 12:00 for the nozzle spout in the vertical position and 6:00 for the nozzle pointed downward. This could be made clearer by identifying the 12:00 position as where the nozzle points upward.

Response

Section 7.8.2 has been modified, and figures have been added, to clarify the

definition of nozzle orientation.

279. Comment by San Diego

Section 9.1 the calculation of the spill area while Section 9.2 allows the conversion of spills quantified as drops to milliliters. Section 9.1 should state that the spill area does not need to be calculated for those spills quantified as drops.

Response

The suggested change has been made.

280. Comment by San Diego

Section 9.4 should be clarified to state that the “6.28” value in the equation is to be replaced with the specific weight of the gasoline being dispensed, if different.

Response

Only the 6.2 value will be used (see comment 268).

TP-201.2D Post Fueling Drips from Nozzle Spouts

281. Comment by San Diego

Section 2.1 requires the vapor recovery nozzles, including the nozzle shut-off mechanisms, and associated hardware be inspected and verified to be in good working order, as specified in CCR 94006. For determining compliance, TP-201.2D should be performed on nozzles as found in operation. If certain other test of nozzles and hanging hardware are to be required, they should be specified. In addition, the District has reviewed CP-201 and has not found a test procedure to verify proper operation of the nozzle shutoff mechanism. A procedure for verifying this should be proposed.

Response

TP-201.2D is applicable to certification testing only as specified in section 1.1 and should not be used for compliance purposes. The verification of the correct operation of the nozzle shut-off mechanism will be conducted during the certification process through use of procedures adopted by Weights and Measures for this purpose.

282. Comment by San Diego

Section 2.2 does not state the period during which the number of drips of liquid gasoline is quantified. For clarity, ARB should specify a five-second period.

Response

The suggested change has been made.

283. Comment by San Diego

Section 3.2 prohibits conducting the test if the nozzle or any associated component contains a defect. For purposes of compliance, TP-201.2 should be performed on nozzles as found in operation.

Response

We agree that the nozzles should be evaluated as found. The section has been changed to reflect that during the certification process, nozzles found to be defective should not be evaluated using this test procedure.

284. Comment by San Diego

Section 4.1 describes the annual air quality emissions impact attributable to a single drop of gasoline spilled during each refueling event in California. This background information is of limited value in a test procedure and should be moved to the staff report.

Response

We agree. The background information has been removed from the test procedure.

285. Comment by San Diego

Section 4.2 states that maximum sensitivity and precision is obtained by measuring the drips of liquid gasoline from ten vehicle refueling events. The procedure should be clarified as to whether ten vehicle refueling events are required for each nozzle tested.

Response

Section 2.3 has been added to clarify that compliance with the certification performance standard shall be determined using the combined average result of ten test runs for each nozzle tested.

286. Comment by San Diego

Section 5.1 specifies recording the number of drips from each acceptable refueling event. Section 4.2 defines a refueling event as any refueling episode of at least 4.5 gallons, terminated by activation of the nozzle's primary shut-off mechanism. Is this intended to be the definition of an "acceptable" refueling event in Section 5.1? This should be clarified.

Response

Section 4.3 has been added to define a refueling event as at least 4.5 gallons, terminated by activation of the nozzle's primary shut-off mechanism.

287. Comment by San Diego

Section 5.2 specifies a stopwatch accurate to within 0.2 seconds to measure the dispensing rate. It is unclear whether the intent is accuracy or minimum display resolution of the stopwatch. If accuracy, a time period for this requirement

should be specified. If the intent is for minimum resolution of the stopwatch, the section should be clarified accordingly.

Response

It is more confusing to describe in terms of resolution, even though that is the intent of the stopwatch requirement. For example, a resolution of 0.1 seconds is better, but is a lower value than the “0.2 second minimum”. No change made.

288. Comment by San Diego

Section 6.1 prohibits performing this test if the nozzle or hanging hardware contains a defect. The District recommends performing TP-201.2D on nozzles as found in operation.

Response

TP-201.2D is intended for certification testing only, not for compliance tests. If defects are found, the test results will not reflect acceptable equipment operation. Section 3.2 has been changed to reflect that during the certification process, nozzles found to be defective should not be evaluated using this test procedure.

289. Comment by San Diego

Section 7 requires the tester/inspector to refuel a private vehicle. There are liabilities associated with inspectors fueling private vehicles. Also, waiting for vehicles to arrive will be time consuming and inefficient. The procedure should allow dispensing into an appropriate test receptacle. This would allow districts to conduct the test efficiently and reduce potential liabilities.

Response

TP-201.2D is for certification testing only and is not intended for use by district inspectors. No change made.

290. Comment by San Diego

Section 7.3 describes inserting the nozzle into the gasoline tank with the spout pointed upward in the 12:00 o'clock position. Section 7.6.1 describes removing the nozzle with the spout pointing downward. Per section 3.1, nozzle orientation can bias test results. Since this is an important parameter, the proper nozzle orientation should be clarified.

Response

Section 7.3 has been changed and Figure 1 added to clarify the proper nozzle position.

291. Comment by San Diego

Sections 7.4 and 7.5 describe timing the fueling event. If the reason for performing the flow rate measurement is to verify compliance with Executive

Orders, then the method should be consistent with Executive order procedures which specify the stopwatch be started after at least one gallon has been dispensed. The procedure does not specify pass/fail criteria for the flow rate. The allowable flow rate range should be specified or the requirement for recording flow rate deleted.

Section 7.6 requires recording the refueling time. Unless the refueling time is critical to the test, the requirement for recording refueling time should be deleted.

Response

The dispensing rate information is valuable in assessing whether excessive drips are correlated with certain flowrates. This is useful both during certification and compliance data gathering. It is not intended to replace the flowrate procedure used to determine compliance with the Executive Orders. No change made.

292. Comment by San Diego

Section 7.6.2 specifies tilting the nozzle downward and counting the number of drops of liquid that spill from the nozzle. District staff has observed quantities of gasoline in excess of a few drops (e.g. a pint) spilling from nozzles after a fueling event. Spillage of this type would be difficult to quantify by counting drops. The District suggests a clear, graduated cylinder be used to better quantify spillage in excess of amounts easily counted by drips. The twenty drops per milliliter conversion specified in section 4.1 could be used for recording data. An appropriate receptacle for containing spilled gasoline should be listed in the procedure.

Response

Section 7.6.2 has been modified to define a drip as not more than 1/15 of a milliliter (or 15 drips = 1 ml). If more than a few drops of gasoline is observed, this conversion factor can be used to determine the number of drops. Excessive spillage should be quantified using TP-201.2C.

293. Comment by San Diego

Section 7.6 does not specify the number of times the procedure should be performed for each nozzle. This should be clarified.

Response

Section 2.3 has been added to clarify that compliance shall be determined using the combined average result of ten test runs for each nozzle tested.

294. Comment by San Diego

The field data sheet used to record test data lists "Spitback, Yes or No." Spitback should be defined and included in Section 3 "Biases and Interferences"

if appropriate. If spitback is not a concern for the test, it should be deleted.

Response

A definition for spitback has been added to D-200.

TP-201.2E Gasoline Liquid Retention in Nozzles and Hoses

295. Comment by San Diego

Section 1.2 states that this test procedure can be used to measure “spitting.” It is not clear how the definition of a “liquid leak” (in excess of 3 drops per minute) in D-200 fits with the new allowable “spitting” limit found in CP-201. Do both standards apply or does one exclude the other?

Response

Both the spitting and the liquid leak standards apply.

296. Comment by San Diego

Section 4.2 refers to the “liquid retain less than...” The district suggests rewording to “liquid retention of less than...”

Response

The suggested change was made.

297. Comment by San Diego

Section 5.3.2 requires verification that the 25-ml graduated cylinder is completely empty. Since Section 4.2 lists 10, 25, and 100 ml graduated cylinders as needed equipment, the District suggests that Section 5.3.2 be revised to read: “the graduated cylinder is completely empty.”

Response

The 25-ml graduated cylinder should be used for the baseline runs. No change made.

298. Comment by San Diego

Section 5.3 Spitting is mis-labeled. It should be Section 5.4 Section 5.4.1. The word “in” is missing after “hold the nozzle”.

Response

Section 5.3 has been renumbered. The word “in” has been added to section 5.4.1.

299. Comment by San Diego

Section 5.4.4 directs one to repeat steps 5.4.1 through 5.4.3 (Spitting) until there is no longer tension on the trigger. It is unclear if Section 5.4.4 is intended for the same nozzle that was just tested following the steps in 5.4.1 through 5.4.3

since 5.4.2 directs the tester to hold the nozzle in the cylinder until there is no flow for 10 seconds.

Response

Changes have been made to clarify that the described steps apply to the same nozzle that was just tested.

300. Comment by San Diego

Section 5.5.1 requires that we wait until after a customer has fueled to test a nozzle. District should be allowed the option of dispensing fuel into an appropriate container, returning the fuel to the station's tank. If the nozzle being checked is a premium grade nozzle at a low volume station, there would be an unnecessary delay.

Response

We agree it is more convenient to evaluate nozzles using a test receptacle, however, we argue that the most valid evaluation of liquid retention is made from real vehicle fuelings which include a population of vehicles. No change made.

301. Comment by San Diego

Section 6.1 provides the equation to calculate the mass liquid retention, in pounds. The weight (density) of gasoline used in the equation is 6.2 pounds per gallon. TP-201.2C uses a weight of 6.28 pounds per gallon. The value should be consistent.

Response

The equations to calculate the mass of liquid retained have been deleted from the test procedure as the liquid retention standard is now expressed as ml/1000 gallons.

302. Comment by San Diego

TP-201.2C specifies that if the gasoline being dispensed had a different specific weight, it should be used. TP-201.2E makes no provision for this. The District would prefer that neither test procedures require the use of individual gasoline densities. The single representative value used to set the standard should be used throughout the test procedures.

Response

We agree. TP-201.2E has been changed to remove all references to gasoline density as the standard is now in terms of ml/1000 gallons. TP-201.2C has been modified to use a standard density of 6.28 pounds per gallon.

303. Comment by San Diego

Section 6.2 describes a procedure to calculate the effect on overall system efficiency of gasoline retained in the nozzle/hose assembly. It purports to

assume 100% Phase II vapor recovery. This should be clarified – it appears that what Equation 6.2 estimates is the total weight of vapors emitted during dispensing, regardless of whether 100% is recovered by the Phase II system.

Response

Section 6.2 and calculations pertaining to Phase II efficiency have been removed as these sections are not needed as the standard is in terms of ml/1000 gallons.

304. Comment by Tosco

The test procedure for spitting requires the tester to remove the nozzle from the dispenser holster and begin the test. The liquid allowed to be present within liquid retention requirements is not purged prior to testing for spitting. The procedure therefore tests for both liquid retention and spitting. The spitting procedures should include purging the nozzle of retained liquid or should immediately follow a liquid retention test.

Response

The liquid retention and spitting standards are separate. Both standards should be met by “as found” nozzles. No change made.

TP-201.2F Determination of Hazardous Air Pollutants from Vapor Recovery Processors

305. Comment by Hazlett

An improper constant in the pressure decay formula was brought to staff's attention several times and was finally corrected in mid-1999. There is also a problem with interpretation of the time (0) to start the measured decay record specified as the equilibrium time. Unless the test personnel are examining a gross leaker, there will be a period of pressure rise after the dry gas injection to the initial flow coming into intimate contact with the surface of the pool and causing further vaporization. At the time pressure stops rising growth factors exactly equal loss factors. There is no equilibrium until all of the injected dry gas has come into contact with the liquid surface which may take days for that residual in the vapor return conduit. Since there is no circulation after the termination of the injection process, the remaining dry gas must migrate to the pool surface by diffusion. The basic 'random walk' principle indicates about 86 minutes is required for the average molecule to transit to the surface from 25 centimeter above. Thus, we have continuing growth throughout the decay recording phase that masked the true fugitive emission rate. The present procedure leads to under estimation of the rate of fugitive emission and does not provide a valid basis for determination of cost and effectiveness of the proposed vapor recovery enhancement program. Testing in the 2 inch WCG regime appears to be near the critical zone where transition between turbulent and laminar flow may contribute to considerable scatter in the data. I believe testing

at 1.5 inch WCG would reduce that effect.

Hazlett suggests an alternative procedure where the underground tank is depressurized to a suitable level and the data is corrected to equalize the Reynolds number for air and hydrocarbon vapor. This is a widely used technique in fluid dynamics. The dry gas (air) ingested in this process will take hours to interface with the liquid and the necessary data obtained before any adverse effects on accuracy can occur. Hazlett cannot derive the formula for determining the leak rate in terms of a fractional power of (exp) to three decimal places, but expects staff can justify that the leak rate schedule accurately reflects the necessary compromise for pressure and viscous forces in small leak dynamics.

Response

The equations for the leak decay test are empirical and are based on data from actual fuel tanks. The possibility of vapor growth in the tank masking the leaks is recognized and is remedied in section 7.2.1 of the test procedure. The suggested depressurization alternative is technically valid, yet it is not practical and there are safety concerns for a field tester to induce a vacuum in the underground vapor space. No changes made.

306. Comment by Hirt

TP-201.2F and 201.3 leak tests need to require that caps be removed from drop tube couplers to insure the leak tightness of the drop tube assembly. Also the procedure must account for leaks during Stage I connect/disconnect and during bulk delivery. Otherwise all the leaks present at a GDF and their impact on vapor recovery efficiency, will not be properly factored.

Response

The leaks described in the comment are evaluated during the Phase I efficiency test (TP-201.1).

TP-201.2H Determination of Hazardous Air Pollutants from Vapor Recovery Processors

307. Comment by San Diego

TP-201.2H should be expanded to include hazardous air pollutant (HAP) measurements at the vehicle-nozzle interface of all systems. In addition, although subsection 8.11 calls for the analysis of ambient air, the ambient air concentrations, the ambient air concentrations of HAPs are not subtracted from the measured concentrations in the procedure.

Response

TP-201.2H is specific to vapor recovery systems with combustion units for the control of hydrocarbon emissions and specific to those combustion units.

Measurement of HAPs at the nozzles would be generic to all vapor recovery systems, including balance and vacuum assist without combustion devices. Measurement of HAPs at nozzles would also include sampling adapters and techniques not included in TP-201.2H. Modifications have been made to equations in section 12.5 that subtracts the contribution of the HAP in ambient air if it is significant.

TP-201.20 Pressure Integrity of Drop Tube Overfill Protection Devices

308. Comment by San Diego

Although allowable leak rates in drop tubes only apply to drop tubes with overfill protection devices, limiting the procedure to only these drop tubes precludes its use for straight drop tubes. There is often no easy way to determine if the leak is through the grommets of the overfill protection apparatus or through the gaskets where the drop tube fits to the pipe riser. ARB should revise Section 1 to allow the testing of all drop tubes with an explanation that straight drop tubes are not permitted to have detectable leakage.

Response

TP-201.20 is applicable to equipment having an allowable leak rate, namely drop tubes with overfill protection devices. It would be confusing to apply this procedure to straight drop tubes, which have no allowable leak rate. ARB staff has agreed to work with CAPCOA to develop inspection procedures for other equipment specifications, one of which could be a “no leak” inspection procedure for straight drop tubes.

309. Comment by San Diego

Section 1.1 lists the applicability of this procedure to overfill protection devices (OPD) located in Phase I product drop tubes. The test method should also apply to the Phase I product adapter. Leaks from either the OPD or the product adapter can affect the efficiency of the Phase I system and could easily be quantified by this test method. Distinguishing whether the leaks come from the adapter of the OPD is irrelevant if the product adapters are to be free of any leaks. Section 2.2 requires leaks attributable to the Phase I product adapter to be corrected prior to compliance verification of the OPD.

District staff has reviewed CP-201 and can find reference only to leak rates for vapor adapters. The District recommends that CP-201 specify leak rates for the Phase I product adapters. Once specified, this test method should be retitled to include the entire drop tube assembly including the OPD and Phase I adapter.

Section 3.1 requires testing of the Phase I product adapter prior to determination of the compliance status of the OPD. Section 5.5 requires soap solution be used to detect leaks around the Phase I product adapter. In the case of an OPD with a leak rate at or just below the requirement, this implies a zero leak rate

standard for the Phase I product adapter interface. District staff has reviewed CP-201 and finds no reference to the product adapter. As state above, the District recommends modification of the test procedure to quantify and include the leak rate of the Phase I product adapter. Doing so would expedite the testing by avoiding repeated testing of the product adapter.

Response

CP-201 has been revised to clarify that both the product and vapor Phase I adaptors shall have no leaks.

310. Comment by San Diego

Section 3.2 prohibits vehicle refueling during the test, but does not mention bulk deliveries. Bulk gasoline deliveries during the tests and just prior to testing could bias the test results, particularly with manifolded tanks. The District recommends that bulk deliveries just prior and during any testing be prohibited in the procedure.

Response

Section 3.2 has been modified to prohibit conducting the test during bulk deliveries. Our position is that testing immediately after the bulk delivery is acceptable.

311. Comment by San Diego

Section 3.3 states gasoline product levels less than four inches above the highest point of the submerged drop tube outlet may bias the test towards non-compliance. Section 6.5 requires the liquid level to be at least four inches above the highest point of the submerged fill pipe outlet. District staff has observed fuel levels at or above the OPD. This occurs when the OPD engages due to overfill yet the remaining fuel in the cargo tank and line is allowed to slowly drain into the UST. Fuel above the OPD could mask any leaks in the OPD and significantly bias the test towards compliance. The procedure should specify a required liquid level below the OPD.

Response

Section 3.4 has been added to ensure the liquid level is below the OPD before conducting the test.

312. Comment by San Diego

Section 4.1 lists background instrumentation information. This background information is of limited value in a test procedure. The District requests that this section be deleted.

Response

We disagree. Section 4.1 provides information on acceptable precision. No change made.

313. Comment by San Diego

Sections 4.2 and 4.3 are repeated in sections 5.2.1 and 5.2.2 and conflict. The pressure gauge specifications should be included in only one section. Section 4.2 specifies 2.0 percent of full scale but section 5.2.2 specifies 1.0%. The minimum accuracy of mechanical pressure gauges should be clarified.

Response

Changes have been made to 4.2 and 4.3 to address these concerns.

314. Comment by San Diego

Section 5.4 requires a stopwatch accurate to within 0.2 seconds to time the duration of the test. It is not clear if the intent is for accuracy or minimum display resolution. If accuracy, a time period for this requirement should be specified. If the intent is for minimum resolution, the section should be revised accordingly.

Response

It is more confusing to describe in terms of resolution, even though that is the intent of the stopwatch requirement. For example, a resolution of 0.1 seconds is better, but is a lower value than the "0.2 second minimum". No change made.

315. Comment by San Diego

Section 5.6 requires venting the UST gasoline vapor. There is a general lack of safety provisions in the procedure. The procedure should specify how to safely vent pressurized UST gasoline vapor using the vapor poppet pressure relief assembly. The procedure should specify all necessary safety requirements, including any grounding requirement for the test equipment assembly.

Response

Section 5 specifies the equipment to be used. If testing personnel are not familiar with the safe use of testing equipment, they must refer to the testing equipment manufacturer's instruction manual. Additionally, testing personnel should be familiar with safety standards prescribed by the Department of Industrial Relations, Division of Occupational Safety and Health (DOSH) and the State and local fire marshals. No change made.

316. Comment by San Diego

Section 6.1 requires calibration of the flow meter and pressure measuring devices in accordance with EPA or ARB protocols. The approved protocols should be referenced in the test procedure.

Response

A reference to the ARB flowmeter calibration methodology has been added to Section 6.1.

317. Comment by San Diego

Section 6.3 requires the product drop tube be equipped with an OPD. Recent District and ARB testing indicated a higher leakage failure rate for standard drop tubes than drop tubes with OPD's. The District recommends that the procedure be applicable to both types of assemblies. CP-201 should specify no allowable leaks for standard drop tube assemblies.

Response

Section 3.3 of CP-201 states that "Drop-tubes that do not have an over-fill protection device shall not leak." No change made.

318. Comment by San Diego

The field data sheet should include a column to record allowable leak rates and whether the test results were in compliance with applicable standards.

Response

The data sheet provided in the test method can be used for certification tests, compliance tests, field surveys, etc. The data sheet records the test method results, and can be modified by the District if desired to add other information specific to compliance testing. No change made.

TP-201.3A Determination of 5 inch (WC) Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities

319. Comment by San Diego

ARB is proposing to repeal TP-201.3A, "Determination of 5 Inch (WC) Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities". This test procedure will still be needed for at least several years until EVR certified systems are fully deployed in California. Several existing certifications for aboveground tanks require that the vapor recovery system be initially and annually "leak checked at 150% of the maximum working pressure of the tank (P/V valve setting), or 5 inches of water column pressure, whichever is greater..." The executive orders typically call for a 2.5 inch wcg P/V valve setting. The District is currently requiring that either TP-201.3(A) or the District 10-inch wcg pressure decay/leak test be conducted on aboveground tanks. By repealing TP-201.3A, there will be no CARB-approved test procedure for use by facilities to demonstrate compliance with the current executive orders. This will make it difficult to assure compliance.

Response

We have withdrawn the proposed repeal of TP-201.3A.

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

320. Comment by San Diego

The test procedure is titled Determination (by Volume Meter) of Air to Liquid Volume Ratio of Vapor Recovery Systems of Dispensing Facilities. The procedure describes how to measure the air-vapor to liquid ratio. This should be reflected in the title and references to A(-V)/L in the procedure.

Response

We agree that the title proposed by San Diego is technically more accurate and considered making this title change. However, it became apparent that A/L is the common terminology used to describe this system standard and a change now would lead to confusion. No change made.

321. Comment by San Diego

Section 1.1 refers to the use of “a coaxial design, or equivalent.” Section 2.1 makes reference to the use of “a rotary gas meter, or equivalent.” The term “equivalent” is somewhat ambiguous and may not be interpreted consistently. The procedure should define “equivalent” or provide the criteria for determining if a design is equivalent.

Response

The language has been changed to remove the word “equivalent” in both cases.

322. Comment by San Diego

Section 2.2.1 describes checking the pressure integrity using either a liquid leak solution or a bagging technique. The procedure should reference the approved procedures that can be used to verify the pressure integrity. Without this, the results of soaping or bagging may not be comparable to a standard.

Response

The language has been changed to show that the soaping or bagging is intended to verify the absence of leaks.

323. Comment by San Diego

Section 3.2 references the dispensing rates required for conducting the A/L test. The District has tested nozzles where the first test run was outside the required flow rate. Subsequent tests of the same nozzle found the flow rate were well within specifications. The procedure should specify how many test runs are needed to determine a given nozzle incapable of meeting the standard.

Response

The allowable range of A/L values determined within the standard for the system are specified in the applicable Executive Order for each system. These values are valid only within the range of dispensing rates specified in the applicable Executive Order for the system. A/L test results at dispensing rates outside the allowable range are invalid. A minimum allowable dispensing rate has been

established and included in the Executive Orders for some systems, with the specification that the dispensing rate shall be shall be measured at the highest possible dispensing rate and when only one nozzle associated with that product is operating. Therefore, if an A/L test is conducted and the dispensing rate is below the range specified in the Executive Order, the test should be repeated with only one nozzle associated with that product operating. If the required dispensing rate is not achieved under these conditions, then a finding may be made that it is not possible to conduct a valid test at that fueling point. The certification Executive Order is the appropriate place to specify this. No change was made.

324. Comment by San Diego

Section 3.4 includes a description of how bagging or sealing nozzles may bias the test results towards compliance. While this background information is interesting, it is of limited use in a test procedure. This working should be deleted. The requirement to test without bagging should remain in section 3.4 with the addition of the sealing restriction.

Response

We disagree. The reasons why certain actions can bias the test results helps to educate the tester and leads to more reliable test results. No change made.

325. Comment by San Diego

Section 3.5 states that a failed nozzle “shall immediately be removed from service.” This working specifying a compliance action should be removed. The test procedure should direct the user on how to make a pass or fail determination, and not what compliance action should be taken. That should be an enforcement decision for the district.

Response

The suggested change has been made.

326. Comment by San Diego

Section 3.6 indicates that draining gasoline will bias the test toward compliance. While this background information is interesting, it is of limited use in a test procedure. The wording that describes how compliance may be biased should be deleted. The requirement to test without draining the hoses should remain. The District recommends performing TP-201.5 on nozzles as found in operation.

Response

The reasons why certain actions can bias the test results helps to educate the tester and leads to more reliable test results. We agree that the nozzles should be tested as found. Language to prohibit draining the hoses before testing was specifically requested by the CAPCOA Vapor Recovery Committee. No change made.

327. Comment by San Diego

Section 3.7 describes how pressure can be created in the headspace by draining gasoline into the storage tank. While this background information is interesting, it is of limited use in a test procedure. The wording that describes how the test may be biased should be deleted. The requirement to test with the P/V valves in place unless the Executive Order requires otherwise should remain.

Response

The reasons why certain actions can bias the test results helps to educate the tester and leads to more reliable test results. No change made.

328. Comment by San Diego

Section 5.1 limits the length of the adapter supply line to 8 feet. However, Figure 1 limits the length to 6 feet. The correct length should be consistent between Section 5.1 and Figure 1. The required length, if any, of the 2" Air/Vapor inlet/exhaust should also be specified.

Response

Section 5.1 has been changed to show a maximum of 6 feet. The required length for the Air/Vapor inlet/exhaust is 6 to 18 inches as shown in revised Figure 1.

329. Comment by San Diego

Section 5.3 Gas Meter Inlet Manifold – The section should reference Figures 1 and 3 and indicate which components make up the manifold assembly.

Response

The suggested change was made.

330. Comment by San Diego

Section 5.4 Liquid Volume Meter – Section 6.3 of this procedure requires calibration of the gas volume meter 180 days prior to testing. There is no requirement to verify the calibration of the liquid volume meter. The procedure should state that it relies on the local Weights and measures certification of the dispenser meter, or identify any other calibration requirements for the Liquid Volume Meter.

Response

For purposes of this test procedure, the liquid volume meter of the gasoline dispenser is assumed to be accurate. No change made.

331. Comment by San Diego

Section 5.5 describes a portable tank, "acceptable for use with gasoline." Any

criteria for acceptability should be listed in this section or the phrase deleted.

Response

Section 5.5 has been modified to indicate portable tanks must meet fire safety requirements for use with gasoline.

332. Comment by San Diego

Section 5.5 references a “recommended” plumbing configuration as shown in Figures 1 and 3. “Recommended” should be changed to “required” and optional equipment/configurations noted in the Figures. This will clarify the equipment requirements of the procedure.

Response

“Recommended” has been changed to “required” in Section 5.5. Required dimensions are illustrated in the Figures.

333. Comment by San Diego

Section 5.6 specifies a stopwatch accurate to within 0.2 seconds. Is the intent to refer to accuracy or minimum display resolution? If accuracy, a time period for this requirement should be specified. If the intent is for minimum resolution of the stopwatch, the section should be clarified.

Response

It is more confusing to describe in terms of resolution, even though that is the intent of the stopwatch requirement. For example, a resolution of 0.1 seconds is better, but is a lower value than the “0.2 second minimum”. No change made.

334. Comment by San Diego

Section 5.8 discusses a review of the Executive Order prior to testing. The text should also explain that only certified configurations should be evaluated for A-V/L compliance. For example, a nozzle that is not certified for use with a particular system should not be evaluated for A-V/L compliance because the A-V/L standard only exists for certified configurations.

Response

We agree that appropriate action should be taken when encountering a non-certified system configuration, but this is outside the scope of the test procedure.

The review of the Executive Order discussed in Section 5.8 pertains to appropriate system operation during the A/L test.

335. Comment by San Diego

Section 6.2 describes how the bagging or sealing nozzles maybe used for troubleshooting. While this background information is interesting, it is of limited use in a test procedure. The District recommends deleting the wording in Section 6.2 which describes troubleshooting. The requirement to test without

bagging should remain in Section 6.2 with the addition of the sealing restriction.

Response

TP-201.5 is used during certification and other times to evaluate equipment, rather than for enforcement purposes. The troubleshooting language is useful for these cases. Section 6.2 states that “The A/L test to verify compliance, however, shall be conducted without ‘bagging’ any of the nozzles.” No change made.

336. Comment by San Diego

Section 6.5 states “O-rings shall be properly greased.” The procedure should indicate the proper way to grease O-rings and the frequency required by this procedure. It is not clear if the intent of this procedure is to require O-rings be greased each time the nozzle is installed.

Response

Clarification on greasing O-rings has been provided in modified section 6.5.

337. Comment by San Diego

Sections 6.7 and 7.1 recommend using care during these two parts of the procedure. All activity related to the test should be performed with care. Broad recommendations such as this should be placed in a general section relating to work practices and safety. This would simplify the more specific requirements of the procedure.

Response

We agree that all portions of the test should be performed with care. However, we think that a reminder to be careful when adjusting certain equipment is warranted. No change made.

338. Comment by San Diego

Section 7.5 requires a failed nozzle to be removed from service. The procedure should not specify what compliance actions are to be taken. This wording should be removed. The test procedure should direct the user how to make a pass or fail determination.

Response

The suggested change has been made.

339. Comment by San Diego

Section 7.7.3 requires recording the nozzle model and serial number. Many components of vapor recovery systems such as nozzles, hoses, breakaways, vacuum pumps, and fuel filters have an impact on A-V/L and flow rate performance. The model number of the major components should be recorded. If there is a failure, the model numbers of other components should also be

recorded. It is unclear why serial numbers should be recorded.

Response

The field data form may be expanded to record additional information if desired by the District. The serial number is important as it helps evaluate if the failure occurs on a nozzle manufactured and perhaps installed 5 years ago vs. a brand-new nozzle. No change made.

340. Comment by San Diego

Section 7.9 states “If the A/L Volumetric Ratio is outside the range specified in the applicable (Executive Order) by less than or equal to 0.10, conduct the test two additional times.” The procedure should be clarified as to whether the deviation is in A-V/L units or a percentage, and whether that deviation applies to all or only certain systems. A-V/L ranges vary for different systems. For example, for the currently certified WayneVac system, the upper limit for A/L compliance is 1.10, for the Hasstech system – 2.40. If the limit for both systems were 10% higher, the systems would fail above 1.21 and 2.64 respectively. If the test procedure expresses the amount in A/L units, the systems would fail above 1.20 and 2.50, respectively.

Response

Section 7.9 has been modified to show the 0.10 is in A/L units, not a percentage.

341. Comment by San Diego

Section 7.10 describes how the bagging or sealing of nozzles may be used for troubleshooting. While this background information is interesting, it is of limited use in a test procedure. The working in Section 6.2 describing troubleshooting should be deleted. The requirement to test without bagging should remain in section 7.10 with the addition of the sealing restriction.

Response

See response to comment #335.

342. Comment by San Diego

Section 7.11 requires testing each nozzle at the facility. The executive order certifying a system should specify that all nozzles or nozzle/grade combinations are required to meet the specific A/L ratio. The test procedure should not require each nozzle at the facility be tested. There may be situations, such as testing after a nozzle replacement or during a compliance audit, where testing each nozzle would be unnecessary. The requirement to test each nozzle at the facility should be deleted.

Response

We agree. Section 7.11 has been deleted.

343. Comment by San Diego

Section 7.12 requires periodic draining of gasoline from the hoses. It is not clear how it can be determined if the gasoline being drained from the hose between the A-V/L adapter and the gas volume meter is a result of condensation or of a nozzle failure as described in 7.5.

Response

The intent of 7.12 is to remove any liquid gasoline from the test apparatus, not determine the source of the liquid gasoline. Section 7.12 has been modified to clarify this intent.

344. Comment by San Diego

Section 8.2 indicates that grades of gas are not to be mixed in the test tank. It is a common practice for test contractors to mix grades of gas in the test tank. The mixed gas is returned to the lower octane tank. Mixing of the grades greatly reduces test time by reducing the number of set-up operations at each fueling point. The practice should be allowed provided test personnel advise the site that all gasoline will be returned to the lower octane storage tank.

Response

Section 8.2 has been revised to allow mixing of product grades in the portable tank assembly when approved by the facility owner.

345. Comment by San Diego

Section 8.2.1 describes replacing the P/V valve each time fuel is returned to storage. This would require removing and replacing the P/V valve several times during a site test, greatly increasing test time. In addition, each time the P/V valve is removed or replaced there is the potential for damage to the parts and safety risks to test personnel. The procedure should allow leaving the P/V valve off until testing is completed.

Response

The suggested change has been made.

346. Comment by San Diego

Section 8.5 requires transporting the test tank in accordance with applicable regulations. Any safety recommendations such as this should be placed in a general section of the procedure relating to work practices and safety. This would simplify and clarify the more specific sections of the procedure. It would be helpful to direct testers to sources of current safety requirements related to transportation and storage.

Response

ARB test procedures are used throughout the United States and around the world. We expect that requirements pertaining to transportation and storage of

containers with gasoline vapor will vary. It is the testers' responsibility to assure the test equipment is transported legally and safely. No change made.

VI. Summary of Comments Received in Response to the First “15-Day” Notice

EVR 1st “15-DAY” COMMENT LETTERS
 (Comment period ending October 27, 2000)

#	COMPANY	AUTHOR	DATE	AFFECTED PROCEDURES
1	ARID Technologies	Tedmund Tiberi	10/26/00	CP-201
2	California Independent Oil Marketers Ass.	Jay McKeeman	10/27/00	Cost concerns- request workshops
3	Consulting statistician	Jairus Flora	10/26/00	CP-201, ISD appendix
4	Glenn County APCD	Kevin Tokunaga	10/23/00	Cost concerns, raise ISD throughput exemption
5	Husky	Art Fink	10/23/00	CP-201, TP-201.2, TP-201.2C, TP-201.2D, TP-201.2E
6	Healy Systems	Robert Thompson	10/23/00	ORVR compatibility
7	INCON	Walter Butler	10/26/00	ISD Appendix
8	Malte Persson	Lars-Inge Andersson	10/24/00	CP-201
9	Marconi Commerce Systems Inc. (Gilbarco)	Ken Pope	10/25/00	CP-201 TP-201.2, TP-201.2D
10	OPW	Donald Leininger	10/26/00	CP-201
11	RaceTrac Petroleum	Mike Hilgers	10/17/00	CP-201 (unihose)
12	San Diego County APCD	Rosa Salcedo	10/27/00	CP-201, TP-201.1, TP-201.2, TP-201.2B, TP-201.2C, TP-201.2D, TP-201.2E, TP-201.2F, TP-201.2O, TP-201.5
13	SETRA	Jean Collins	10/27/00	ISD Appendix
14	Vapor Systems Technologies	Roger Grantham	10/25/00	CP-201 (processors)
15	Veeder Root	Robert Hart	10/26/00	CP-201, ISD Appendix
16	Veeder Root	Robert Hart	10/27/00	Amended p. 3 of 10/26/00
17	WSPA	Ron Wilkniss	10/27/00	D-200, CP-201 ISD Appendix

The individual comments and staff responses are grouped by topic below. The topics are organized as follows:

- EVR Implementation Schedule
- EVR Economic Impact
- General Test Procedure Comments
- D-200
- Certification Procedure (CP-201)
- Test Procedures

EVR Implementation Schedule

347. Comment by ARID

ARID does not understand the need to continuously extend the implementation timelines for Phase II EVR systems and ORVR compatibility. ARID's permeation system is a commercially proven and robust technology. We are ready to begin certification testing, but unfortunately positive environmental impacts will be shifted to the future by the existing protocol.

Response

Arid states that the permutation system is a proven and robust technology. CARB staff cannot make that determination without an opportunity to evaluate the specifications and conduct testing in a facility in California. Arid has been encouraged to install a system in a test facility, but has not yet requested designation of a site for installation and testing.

348. Comment by Healy

The need for ORVR compatibility is serious, the technology is in hand, the costs are reasonable and the environmental benefits are obvious. It is imperative that ARB adopt the ORVR compatibility portion of the EVR requirements with no delay in the proposed 2001 effective date or 2003 operative date.

Response

We agree. The EVR effective and operative dates remain April 1, 2001 and April 1, 2003, respectively.

EVR Economic Impact

349. Comment by CIOMA

The EVR regulations entail a highly complex set of requirements that will have significant economic consequences on our membership (approximately 1300 service stations. Improvements are made entirely at the cost of the station owner, who does not have access to the large volume discounts available to major oil companies. Many CIOMA members have already taken out loans to finance significant upgrades to fuel delivery systems required by government regulations and may not have access to further credit.

Due to the complexity of the regulations, it is difficult for CIOMA to assess the economic impact, especially related to equipment that hasn't been invented or is not currently available on the market. Apparently CARB feels it is necessary to completely decertify the entire population of vapor recovery equipment, which promotes a program of unknown variables, speculative costs and complexity bordering on the unintelligible.

CIOMA requests a series of workshops to educate the regulated community on specific issues related to these highly complex requirements. Workshops should include briefings on EVR requirements (timing, types of technology or improvements needed by date), technology review and status of development, certification review and cost estimates.

Response

The EVR revisions are comprehensive and represent a complete overhaul of the vapor recovery certification program. State law requires recertification of vapor recovery systems when standards are revised. The Board is sensitive to the economic impacts of EVR, particularly on small businesses, and directed staff in Resolution 00-9 to work with businesses to explore avenues for addressing increased costs and financing of these costs.

The Board also directed staff to hold workshops in conjunction with the technology review. Staff will include the subjects recommended by CIOMA in these workshops to educate affected stakeholders on EVR status.

350. Comment by Glenn County

The ISD exemption level should be raised from 13,000 gallons/month (160,000 gallons/year) to 50,000 gallons/month to avoid excessive costs to low-throughput independents and “mom and pop” stations. The low-throughput GDFs can expect to pay at least 25% higher costs for equipment and installation than major oil due to economies of scale. The costs for ISD are difficult to assess as systems have yet to be designed and demonstrated, but industry indicates that sensors and dataloggers may be expensive in order to meet ARB monitoring criteria. Low throughput stations will be stuck with another “black-box” type of technology that will be difficult and costly to operate, repair and maintain. Alternatives to ISD, such as an enhanced monitoring program consisting of low-cost screening and diagnostic tests could be used in place of ISD for GDFs less than 50,000 gallons/month.

Response

We will defer a change on the ISD throughput exemption until the pilot study on ISD is complete for the technology review in 2002. As directed by the Board in Resolution 00-9, the technology review shall be comprehensive, thorough, and rigorous and include an evaluation of all practical alternatives to, and means of meeting, the requirements of the EVR goals. As the first effective date for ISD requirements is April 2003, no stations will be required to install ISD until after the technology review.

General Test Procedure Comments

351. Comment by San Diego

Some test procedures are only for certification testing and are not allowed for

district enforcement purposes. ARB staff has stated that individual executive orders will state parameters to be tested and provide “field-friendly” test procedures. The District would be more comfortable having a written commitment to do this.

Response

The EVR modifications are intended to strengthen the certification process. Although some test procedures are suitable for compliance purposes, the intent of the test procedures is to thoroughly evaluate vapor recovery systems in order to certify to performance standards. Several of the certification test procedures involve significant number of repetitions and are not suitable for compliance purposes. The California Air Pollution Control Officers Association (CAPCOA), an association that includes all the California air pollution control and management districts, offered to finalize five inspection procedures (December 1, 1999, letter from CAPCOA President Larry Greene). The February 14, 2000 memorandum prepared by the CAPCOA/ARB Attorneys Vapor Recovery Subcommittee on vapor recovery short-term issues discusses the use of inspection procedures for compliance purposes. Page 11 of the memo affirms that ARB has requested Districts to submit credible test procedures for review by the ARB and incorporation into title 17 or the certification Executive Orders.

D-200 Definitions

352. Comment by WSPA

It is more common to use the word “inside” rather than “internal”. For example, ID means inside diameter, OD means outside diameter.

Response

The suggested change has been made.

CP-201 Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities

353. Comment by San Diego

Table 3.1 lists an efficiency and an emission factor requirement for Phase I and references section 3.1. However, section 3.1 only requires compliance with the emission factor from systems with processors. Why is this distinction being made rather than leaving it as a general requirement for all Phase I systems as in the original document?

Response

The new Phase I standard is 98% efficiency. This can be determined by a volumetric efficiency test for systems without processors without the need to determine mass emissions. The volumetric efficiency test cannot be applied to systems with processors, so mass emissions are measured and the emission

factor and efficiency can be calculated from the mass balance. No change made.

354. Comment by San Diego

“Appendix 1” should be added to the reference to TP-201.2B for clarification in section 3.5.

Response

The suggested change has been made.

355. Comment by San Diego

Section 3.5.2 added leak rate standards. How were these standards determined and how do they relate to system efficiency?

Response

The maximum allowable leak rates for pressure/vacuum (P/V) vent valves were developed to reduce the potential pressure-related fugitive emissions from sources with allowable leak rates. At least one currently certified P/V vent valve is capable of meeting these specifications, demonstrating that they are achievable. In addition, an incentive is provided for manufacturers to certify to even lower values to allow the installation of two or more P/V vent valves at a facility.

356. Comment by WSPA

In section 3.5.2, the word “at” is missing from the specification for vacuum conditions.

Response

The suggested correction has been made.

357. Comment by San Diego

Section 3.6.1 describes testing with a lid removed or “depending on the design”. The District requests a description of the design differences so it can be determined how to perform the test.

358. Comment by WSPA

The wording of section 3.6.1, “when tested both with the lid installed and removed, depending on the design”, is confusing.

Response to Comments 357 and 358

Section 3.6.1 has been modified to clarify that containment boxes with cover-actuated drain valves shall be tested both with the lid installed and with the lid removed.

359. Comment by WSPA

Section 3.6.4 should clarify that drain valves are not required for fill-side containment boxes; however, if a valve is used, a leak specification applies.

Response

Section 3.6.2, rather than section 3.6.4, has been modified to clarify drain valve requirements.

360. Comment by WSPA

Table 4.1 should be revised to allow systems that are certified by allowable emission factor and/or efficiency to meet the ORVR compatibility requirements.

Response

Table 4-1 has been revised as suggested.

361. Comment by San Diego

Section 4.2 contains equations for determining the pressure decay limits. No similar equations are found in any engineering reference manual or textbook on fluid mechanics because they contradict and violate physical laws. No critical factors, such as orifice coefficients, density changes, etc. are addressed in the equations.

Response

The equations in section 4.2 were derived empirically between 1989 and 1993 from actual field tests on an underground tank vapor space with a known leak rate. Since the decay follows an e^{-rt} curve, the value of r was determined empirically by introducing the allowable leak rate at an initial pressure of 2.00 inches and recording the final pressure after time t . R can be calculated as $[\ln(P_o/P_f)] / t$. The allowable leak rates used to derive the equations were based on allowable leakrates of components, with a 10% degradation factor included and empirical testing of both new and recently installed components. The allowable leakrate for the balance system is larger, due to generally lower working pressures for balance systems vs. assist systems.

362. Comment by San Diego

The language added to section 4.6.1 to allow for exclusion of noncompliant Phase I equipment and/or operations when determining Phase II compliance is vague and unenforceable. This language could result in certifications that allowed for periods of noncompliance without stating how these periods were determined. This could result in noncompliant installations where districts are unable to determine if it is attributable to Phase I. The previous language requires certifications to include the criteria used to determine noncompliance attributable to Phase I and is preferable.

Response

Section 4.6.1 has been modified to clarify which Phase I equipment and/or

operations are considered noncompliant for purposes of excluding UST pressure data.

363. Comment by ARID

The modification to 4.6.1 minimizes the negative impact of maintaining the storage tank pressure at elevated levels. The Stage II system should be penalized accordingly.

Response

As clarified in the further modification of section 4.6.1, the intent is to exclude pressure excursions which result from improper Phase I deliveries.

364. Comment by WSPA

Section 4.6.2 refers to the “integrity of the UST”. Should the word “system” be added?

Response

Section 4.6.2 has been revised to read “integrity of the vapor recovery system”.

365. Comment by Marconi

How often should the pressure be measured in order to calculate the daily pressure specified in section 4.6.3? Also, the UST daily pressure requirement will be easier to meet as the population of ORVR vehicles increases. The UST pressure requirement should be phased in from a higher value to 0.25 for systems that desire to use a hydrocarbon sensor.

Response

The daily average pressure limit of 0.25 inches H₂O was established because minimal emissions are caused by low average pressures. CARB recognizes that the increase in the population of ORVR-equipped vehicles will result in lower storage tank pressures for those systems that limit the volume of vapor and air ingested from such vehicles. However, ORVR-compatible systems must be capable of effective operation over a range of vehicle populations, including those located in areas where there is a large population of older vehicles not equipped with ORVR systems. No change was made.

366. Comment by Veeder-Root and Flora

The UST pressure criteria in Table 4-1 and section 4.6 conflict with the criteria developed in the ISD Appendix. One justification is that the “non-excluded hours/day = 0 ± 0.05 in H₂O cannot be accomplished with any known pressure sensor technology. The 0.25 and 1.5 in H₂O criteria can be accomplished more reliably using more robust statistical methods as described in the ISD Appendix.

Response

We disagree. The criteria in section 4.6 represent vapor recovery system

certification standards that we believe can be met by existing pressure sensors, though more than one sensor may be required. The UST pressure criteria in the ISD Appendix pertains to monitoring of the UST pressure for systems by the ISD system, which specifies a separate standard.

367. Comment by Husky

Section 4.7.3(c) refers to the “retaining spring”. Balance nozzles and some assist nozzles do not have retaining springs, they have retaining collars. Add “or collar” after “spring”.

368. Comment by OPW

Section 4.7.3(c) states “The retaining spring shall terminate 3.0 inches (7.6 cm) from the terminal end.” This language has raised questions in the past as to whether it means “exactly 3.0 inches” or “at least 3.0 inches”. OPW suggests the language be changed to “a minimum of three (3) inches” from the terminal end to be consistent with USEPA interpretation of this requirement. OPW also suggests the use of “retention means” rather than “retaining spring” as nozzles may use other means, such as nozzle rings, to hold the nozzle in a vehicle fillpipe.

369. Comment by WSPA

There should be a +/- tolerance for the “3.0 inch (7.6 cm)” specification.

Response to Comments 367, 368 and 369

Section 4.7.3 (c) has been revised to read “The retaining spring **or collar** shall terminate **at least** 3.0 inches (7.6 centimeters) from the terminal end.” The tolerance is one-half of the lowest decimal place, which is ± 0.05 inches.

370. Comment by Husky

In section 4.10.2 replace “hold open latch” with “nozzle valves”. This would require that both the vapor and fuel valves be closed as required for fire safety.

371. Comment by Marconi

Replace “hold open latch” with “either the vapor check valve or liquid fuel valve”.

Response to Comments 370 and 371

Section 4.10.2 has been revised to replace “hold open latch” with “nozzle valves”.

372. Comment by San Diego

Section 4.11 imposes certain requirements on facilities making a “modification”. It should be clarified whether this is intended for “major modifications” as defined in D-200, or if this is intended for any modification.

373. Comment by WSPA

The modification criterion in section 4.11 may be interpreted overly broadly. For example, installation of sensors for ISD could be deemed a modification. We suggest that, at minimum, the wording read “significant modification that affects the dispenser vapor piping or replaces more than 50% of dispensers.

Response to Comments 372 and 373

Section 4.11 has been revised to clarify that a modification is when the facility replaces more than 50 percent of the dispensers or modifies over 50 percent of the vapor piping in the dispensers, other than the installation of required sensors.

374. Comment by San Diego

Section 4.12.4 requires the vapor return piping be constructed of rigid piping to ensure the proper slope is achieved and maintained. The District requires guidance as to how proper slope is verified, especially maintenance of the slope, after backfilling and grading.

Response

The recommended and minimum slope requirements are outlined in 4.12.4 and can be determined by various means. The district can specify required slope and the method to verify proper slope through individual facility permits.

375. Comment by WSPA

Section 4.12.4 should read, “x” inch per foot of run.

Response

The suggested change has been made.

376. Comment by Veeder-Root and Flora

It is not clear whether the alarm system for the liquid condensate trap in section 4.13 should be part of the ISD system. We suggest that the liquid trap alarm be included as an ISD requirement.

Response

Liquid condensate traps are only allowable when underground piping slope requirements cannot be met at a gasoline dispensing facility. It is not appropriate to include the trap alarm as an ISD requirement for these rare cases. No change made.

377. Comment by Husky

A test procedure is needed for the dynamic pressure criteria in section 5.2 so that the vapor recovery component results will be comparable and will sum up to the pressure drop found when the components are assembled.

Response

The component criteria can be determined using TP-201.2B, which is a general test procedure for various flow vs. pressure standards. We will develop more specific procedures for components if the need arises.

378. Comment by Husky

It is no longer necessary to have vapor valves that will hold a negative pressure of 100 inches water as required in Table 6-1. With the new requirement for single hose dispenser there is no vacuum applied to the vapor valve of an idle nozzle. The specification of 0.038 cfh at + or – 2 inches water would do the job.

Response

The unihose requirement has been modified to allow continued use of existing multi-hose dispensers until there is a dispenser change. Thus, the 100-inch standard is still needed. No change made.

379. Comment by Marconi

Table 6-1 and section 6.2 provide the A/L requirements for assist systems. Why is a maximum A/L limit on systems without processors necessary if the UST pressure requirements can be met? Is the maximum A/L applied to each transaction or is it averaged for the 200-car emission test? If a HC sensor is used to detect ORVR cars and the assist system is turned off, the A/L on non-ORVR cars could be slightly above 1.0 while the average system A/L could be well below 1.0.

Response

The maximum A/L applies to each dispensing point as determined by TP-201.5. It is not an average of the A/L values recorded during the 200-car test. No change made.

380. Comment by Malte Persson

The maximum A/L ratio in section 6.2 should be at least 170%, but preferably not regulated at all. There are only two options available to minimize the emissions at the filling neck, a mini-boot or a high A/L ratio. Since our processing unit needs extra air supply, we would prefer a high A/L.

Response

As stated in the ISOR/Staff Report (p.32), the limit on A/L is necessary to minimize excess emissions in the event of processor failure. No change made.

381. Comment by VST

Section 8.1 specifies that emissions from benzene from a non-destructive processor shall not exceed 7.2 lbs/year. According to CARB staff, the intent is to limit additional exposure to benzene over what is occurring presently. It is possible that this standard could restrict the use of a non-destructive processor and increase the public's exposure to benzene. VST's calculations indicate that

a balance system operating at 95% efficiency would exceed the 7.2 lb/1000 gallon limit at throughputs greater than 100,000/month. CARB should apply an overall system benzene limit to all types of systems. The key is that the processor is part of the overall vapor recovery system, but unlike other types of systems (such as balance) it is feasible that all the system emissions could be from the processor (zero losses at the nozzle, P/V valve, etc.).

Response

The processor limits for benzene have been removed from CP-201.

382. Comment by San Diego

Table 8-1 contains HAPs emission limits for destructive processors. Elsewhere in air pollution control, flares and afterburners are used to destroy HAPs. Verbal reports from ARB staff stated a test was conducted that showed this is the case with the burner systems. There was 1,3-butadiene in the vapor space and far lesser amounts coming out the exhaust system. The first run was said to have a concentration of 18 ppb due to by-pass and the next two runs showed no 1,3-butadiene above the detection limit of 7 ppb. Why wasn't this information published? Where is the evidence that the burner systems create HAPs? Where is the evidence justifying the limits, cost or the need for a HAPs test? Why isn't there HAPs tests for all systems conducted at the vehicle-nozzle interfaces that are close to the breathing space of customers?

Response

While the ARB does have preliminary data, the data was not relied upon to determine the specification. The limits were calculated to correspond to an increase in risk of 1 in a million. Risk assessments for GDFs, conducted in accordance with CAPCOA guidelines, already include gasoline vapor toxics at the vehicle-nozzle interface, but do not address toxics due to products of incomplete combustion at a destructive processor. The new HAP limits are needed to ensure that gains by better collection of vapors by systems with high vacuums do not translate into higher toxic emissions.

383. Comment by ARID

Section 8.3 limits the feedrate to the processor. The non-destructive processor can accommodate a wide range of flowrates and not exhaust hydrocarbons beyond some threshold quantity. It does not make sense to constrain the hydrocarbon feedrate to the processor, it should be established during the certification process.

384. Comment by San Diego

Section 8.3 imposes a hydrocarbon feedrate limit to both destructive and non-destructive processors. A membrane system can easily exceed the limit of 3.8 lbs/1000 gallons to the processor. What is the justification for this limitation?

385. Comment by VST

The maximum hydrocarbon feedrate to the processor in section 8.3 should be deleted. Specifying a limit on the amount of hydrocarbons that can be sent through a processor affects processor performance, but does not necessarily have any bearing on processor emissions during a failure. The 3.8 lbs/1000 gal appears to be an arbitrary value, at least with regard to membrane design. If CARB wishes to limit emissions **from** a processor in event of failure, then that should be the way the specification is worded. VST intends that emissions on the event of processor failure would be zero, and this could be validated during certification testing by simulating failure modes. Specifying a limit to the feedrate will only serve to reduce system efficiency and will do nothing to limit emissions.

386. Comment by Veeder-Root and Flora

The maximum HC rate to processor limit will prohibit use of air-extracting membrane-type processors. They operate by circulating tank vapors at higher rates than the 3.8 lb/1000 gallon limit through the membrane filter and back to the tank. Instead, careful ISD monitoring could identify risk of emission due to faulty operation. This requirement should be applied only to destructive processors and the criteria in the ISD appendix should apply to air-extracting type membrane systems.

Response to Comments 383-386

The maximum feedrate to the processor has been increased to 5.7 lbs/1000 gallons. The feedrate limit is necessary to minimize processor emissions in the event of processor failure. Manufacturers of systems that exceed this feedrate limit, but complies with the primary emission factor, may apply for consideration as an innovative system as described in section 2.3 of CP-201.

387. Comment by Marconi

In section 9.2.1, the system manufacturer should not be responsible for the warranty on hanging hardware unless the system manufacturer is also the hanging hardware component manufacturer.

Response

The intent is that the certification holder ensure that each component meets the warranty requirements, not necessarily honor the warranty obligations of other equipment manufacturers. Language has been added to section 9.2 to clarify this intent.

388. Comment by Marconi

The training requirements in section 9.3.3 should be limited to the original owner/operator.

Response

Section 9.3.3 has been modified to clarify that the training requirements apply to the owner/operator at the time the vapor recovery system is installed.

389. Comment by Marconi

The serial numbers in section 9.4 should be required on major system components only.

Response

We see no reason why all components cannot have serial numbers. This aids in identification of problems during testing. No change made.

390. Comment by Flora

Section 11.9.2 is not clear. Presumably the intent is to notify all manufacturers of the components that are being incorporated into the new system, not all manufacturers of similar parts.

Response

The commenter has inferred the intent correctly. We think that the intent is clear when 11.9.2 is read in the context of 11.9. No change made.

391. Comment by San Diego

Section 13.3.2 allows the Executive Officer to exclude a period during which the system does not comply with the pressure integrity requirements if “the failure was caused by a non-system specific component. The District objects to this vague reference in which a “non-system-specific component” is not defined. This provision allows ARB to certify equipment that does not fully comply with the testing requirements. This can lead to unreliable equipment out in the field where the districts are left to deal with the operational problems as has happened in the past.

Response

The language in section 13.3.2 that allows an exclusion period if the failure was caused by a non-system specific component has been removed.

392. Comment by Flora

Section 13.3.2 refers to the UST meeting the pressure integrity standard, but provides no reference to the standard to be met. Reference should be made to section 2.2.1.4 in the ISD Appendix.

Response

The “pressure integrity standard” language has been removed. See comment 391.

393. Comment by Flora

Section 13.3.4 states “The average of no less than three thirty-consecutive-day

periods of valid UST pressure data shall be used to verify that the system meets the standard. However, there is no reference to what pressure integrity standard is intended. Reference should be made to section 2.2.1.4 in the ISD Appendix. Then the requirement could be that the standard be maintained for 3 consecutive 30-day periods.

Response

Language has been added to section 13.3.4 to reference the standards specified in sections 3 and 4 of CP-201.

394. Comment by Flora

Section 13.3.5 states that performance of the system and its components must be conducted periodically throughout the 180-day operational test period. The results of these performance tests must be used to extrapolate or forecast the performance of the system over the warranty performance period. The number of performance tests, test intervals and method of extrapolation should be provided.

Response

The tests conducted and frequency of the tests will vary for each system. Warranty periods will also vary, depending on the wishes of the applicant. The method of extrapolation will thus depend on the system being certified and cannot be specified in advance. No change made.

395. Comment by Husky

Section 15.2 is overly broad and unduly restrictive upon the ability to transfer the controlling interest and possible any ownership interest in a company or its significant assets. Similarly, the provision is otherwise ambiguous on single product line sales and may permit someone to sell the certification of a single product and permit piecemeal sales of certification. This provision is unworkable as there are always changes in ownership in a publicly held corporation. The real issue should be the continuity of operations regarding the certified product. This provision should be struck or redrafted in its entirety and subjected to additional review. If the company is sold, the new owners should have 3 to 6 months to show CARB that they are able to maintain the quality of the certified product.

396. Comment by Flora

Making the certification non-transferable as required by section 15.2 will inhibit buy-outs or consolidation of the industry, since it means that one company cannot buy another to obtain the other's certified vapor recovery system. That is, the system would have to repeat the certification testing, which is time consuming and quite expensive. Further, this section would appear to prohibit one company from developing a vapor recovery system, certifying it, and then selling it through a number of different suppliers under different brand names. At

least, if this is intended, the brand names must be known and implemented during the certification. This may discourage some companies from developing a system, since it would be more difficult to market.

Response to 395 and 396

The provision is needed to assure that the new company or individuals who sell the system or system components will show financial responsibility as required by CP-201 section 11.6 in order to assure that the systems and components will continue to be manufactured as earlier certified and in order to assure the ability to honor warranties. No change made.

397. Comment by ARID

The decision to arbitrarily categorize all processors as system specific components in Table 16-1 requires further explanation. The Executive Officer should consider amendment once a processor has been certified in conjunction with a given Stage II system configuration and is subjected to operational tests and/or engineering evaluations to demonstrate non-system specificity.

Response

Processors are key components of vapor recovery systems and should be thoroughly tested on each system on which the processor manufacturer desires to be certified. No change made.

398. Comment by Veeder-Root and Flora

ISD is not listed in Tables 16.1 or 16.2. This means it is viewed as system-specific by default. The ISD system should be capable of monitoring the performance of any vapor recovery system using the same sensors for all cases. ISD should be added to Table 16.2 as a “non-system specific component”.

Response

ISD systems have not yet demonstrated that they will perform equally well with all system types. Evaluation of the ISD system as a non-system specific component will take place during the ISD pilot study. No change made.

399. Comment by Husky

Add language in section 16.2 to allow operational testing on systems that have been CARB certified systems but are not EVR certified. This is necessary because it will be at least 2 years before there is an EVR certified system. If testing must wait for an EVR certified system, it will be years before there is more than one manufacturer of each component that has been certified to the new EVR standards. Is it legal for these manufacturers to have a corner on the market? The sooner components have been tested and certified to the new standards, the sooner vapor recovery will improve. These EVR certified components would be used as replacement parts on systems still in the field.

Response

Manufacturers can apply now to initiate certification testing to meet EVR requirements. Component manufacturers have joined forces to create EVR Phase I systems that are currently under test. The same process is available to Phase II manufacturers. No change made.

400. Comment by Marconi

The inclusion of nozzles in the system specific list in section 16 is not practical. It will be very expensive and time-consuming to conduct multiple 180 day/200 car tests for each system that would like to have more than one nozzle available for that system. A bench test could be developed to check that the nozzle met design standards and the 200-car emission/efficiency test could be waived.

Response

Field and emission testing is critical to ensure that each nozzle meets standards with each system to which it is certified. No change made.

CP-201 ISD Appendix

401. Comment by San Diego

There are several issues regarding ISD that have been raised during past meetings with ARB staff and ISD manufacturers that remain unanswered in this document. ARB staff has advised verbally that these issues will be specifically addressed in the design and certification of those ISD systems. With that understanding, the District is withholding many questions and comments on the ISD appendix.

Response

As directed in Resolution 00-9, ARB staff will work with CAPCOA and WSPA to develop a pilot program for ISD systems to be installed in test stations for evaluation and monitoring. The pilot program will address many of the unresolved issues regarding ISD and will provide information for the technology review in 2002.

402. Comment by INCON

Incon provided information on the technological ease or difficulty anticipated with implementing an ISD system in accordance with the requirements in section 2.0. INCON identified several possible means of measuring flow to monitor A/L and suggests that obtaining the vapor flow rate, including all sensors and communication methods, may well be the most costly measurement in the ISD system. INCON believes that measurement of central unit vacuums, UST pressures, Phase I deliveries and vapor processor parameters are feasible. INCON encourages publication of a standardized communication protocol so that all ISD system suppliers will be able to properly receive and process information regarding vapor recovery system operation.

Response

The information provided by INCON suggests that ISD requirements are feasible. Staff will consider ISD communication protocols during the ISD pilot program.

403. Comment by Setra

Setra points out that there is an inverse relationship between absolute accuracy and the pressure range. Two pressure transducers, or one expensive transducer, may be needed to cover the -8 to +3 inch WC range of UST pressures and still be sensitive enough near 0 inch WC to monitor for leaks.

Response

We agree. ISD manufacturers can choose from various approaches to meet the pressure monitoring requirements.

404. Comment by WSPA

Section 1.2 requires that ISD systems have the capability to automatically prohibit the dispensing of fuel...in the event of either a malfunction, failure, or degradation that substantially impairs...the effectiveness of the system. Requiring ISD systems to provide this capability is inappropriate for several reasons. The legal authority for such a prohibition is unclear. It is neither reasonable nor necessary to achieve or maintain air quality. The requirement is overly broad in that it suggests ISD could prohibit dispensing even if the system is operating within acceptable limits, but is approaching an unacceptable condition. In some cases, continued tank drawdown rate exceeds vapor growth in the UST. Emissions increases could result as motorists search for another station, which could cause a greater negative impact than emissions from a vapor recovery system.

Response

The ISD system will prohibit dispensing upon detection of significant failures of the vapor recovery system. Health and Safety Code section 41960.2 already provides authority to shutdown dispensing by "tagging-out" dispensers when defects are discovered. No change made.

405. Comment by WSPA

There should be some additional discussion of the intended "standardized software" requirements discussed in section 1.3.

Response

The intent is to allow use of generally available software programs, rather than proprietary software only sold by the manufacturer, to download data from the ISD system. This requirement will be refined during the ISD pilot study. No change made.

406. Comment by WSPA

The requirements for training and certification of test/calibration personnel in section 1.5 should be clearer (for example, the State License Board should not be mentioned in connection with training). Simple test equipment, such as a voltmeter, may not require calibration to NIST-traceable standards.

Response

Certain training may be required in order to certify to meet State License Board requirements. Most equipment can and should be calibrated to NIST-traceable standards. No change made.

407. Comment by WSPA

The requirement in section 1.7 for self-testing the ISD system should be stated more clearly.

Response

The language is sufficient to indicate that ISD self-testing will be verified during the certification process. No change made.

408. Comment by WSPA

The criteria for “operational availability” of the system should be defined.

Response

The criteria will be developed during the ISD system pilot study.

409. Comment by WSPA

In Section 2, there is no apparent basis for the numeric values chosen (e.g., gross failures are +/- 75%, etc.). In addition, the dual requirements for monitoring both “gross failure” and “degradation” necessitate an unreasonable level of sophistication for a first version of ISD. If specific criteria of this type are to be used, they should be based on the results of the Board-directed pilot program.

Response

The values were chosen after consultation with districts and ISD manufacturers to assist the vendors in designing ISD systems for the pilot program. We agree that these criteria will be revisited upon completion of the ISD pilot program.

410. Comment by WSPA

The requirements assume ISD will recognize the occurrence of a fuel delivery as well as fueling events involving ORVR cars. The fuel delivery monitoring is necessary to calculate “Phase I excluded time” from the UST pressure data. These are but two examples of requirements that are excessive considering the limited experience with ISD.

Response

Tank inventory systems are already in place at many stations that can detect gasoline deliveries. The possible interference of ORVR fuelings with A/L monitoring is recognized and is being addressed by ISD manufacturers/developers.

411. Comment by San Diego

In section 2.1.1.2, the warning alarm will activate when the A/L ratio is at least 75% outside the certified range. This will allow the system to operate without any alarm when the A/L ratio is outside the certified range, but lower than 75%. Current executive orders for vacuum assisted systems describe a fueling point that operates outside the certified A/L range as defective. Defective equipment will be in use without any alarm from the ISD monitor. If compliance testing locates a fueling point outside the certified A/L range, that fueling point will be deemed defective and removed from service. This will lead to confusion for the station personnel who may think the equipment is operating in compliance because the ISD system has not signaled any alarms.

Response

Section 2.1.1.2 sets the level for gross A/L failures, defined at this time as 75% outside the range. Section 2.1.1.2 provides for A/L degradation, which is 25% outside the A/L range. These levels were chosen to avoid consequences of false failures that could occur if the failure mode was too close to the acceptable A/L value. False failures could lead to shutdown of dispensers, even if the system is operating properly. The failure levels will be evaluated during the ISD pilot program and may be modified as technology allows. No change made.

412. Comment by San Diego

Current and proposed versions of TP-201.5 (A/L) require averaging 3 measured A/L values to determine a failure. Will the ISD system calculate the average A/L of 3 consecutive fueling events?

Response

Not necessarily. The ISD system may use any technique desired, but must correlate to final A/L values as determined by TP-201.5.

413. Comment by San Diego

Gasoline dispensing rates are specified in vacuum assist executive orders. These rates are related to the A/L specification and should be incorporated into the ISD alarm system parameters.

Response

The gasoline dispensing rate specifications are associated with measurement of A/L by TP-201.5. The ISD system may use any technique, as long as the result

correlates with TP-201.5. No change made.

414. Comment by San Diego

If ISD has previously prohibited dispensing, what criteria will the system use to re-enable dispensing?

415. Comment by WSPA

The prerequisites for “re-enabling” dispensing which the ISD system has shut down should be discussed, including identifying the person authorized to resume facility operation.

Response to Comments 414 and 415

Section 2 provides that the ISD system shall have the capability of re-enabling dispensing and shall record that event. It is expected that districts will apply criteria for restoring dispensing capability as part of the district rules for permitting GDFs as stationary sources.

416. Comment by WSPA

It is proposed that ISD detect a blockage in the vapor hose for balance systems where blockage is defined as backpressure which is greater than twice the allowable level. Blockage should be redefined so that only one parameter (not both pressure and flow) be measured.

Response

This comment pertains to a draft version of the CP-201 ISD Appendix. A change was made before the comment period to be less specific on the balance system requirement. See the next comment.

417. Comment by WSPA

Section 2.1.2.2 sets forth vapor collection criteria for balance systems. The volume of vapor available for recovery during refueling depends on ambient conditions and whether the vehicle is equipped with ORVR. Flow performances less than 50% may activate alarms when, in fact, no reduction of vapor collection efficiency has occurred. The requirement to monitor vapor collection flow performance should be eliminated because it is infeasible, does not provide useful information and becomes less important as ORVR penetration increases.

Response

We agree that monitoring vapor collection for balance system is a challenge. However, joint district/ARB staff inspections have shown that vapor line blockage is a common problem which can significantly reduce the efficiency of balance systems. The ISD pilot program and subsequent technology review will determine if this requirement is feasible.

418. Comment by Veeder-Root and Flora

Section 2.1.1.3 sets forth A/L degradation malfunction criteria. The words “within 7 days” should be replaced with “on a weekly basis”. Without the change it could be misinterpreted to mean less than weekly which could make the test overlap and conflict with the gross failure test in section 2.1.1.2.

Response

The suggested change has been made.

419. Comment by Veeder-Root and Flora

Section 2.1.3.2 should be revised to require that only dispensing periods be monitored for proper vacuum pump operation. Idle periods should be exempt from such monitoring.

Response

We disagree. A vacuum pump that operates in idle periods can draw in excess air and lead to fugitive emissions. The vacuum pump must be monitored for proper operation at all times. No change made.

420. Comment by Veeder-Root and Flora

The specific leak rate standards derived from TP-201.3 in section 2.2.1.4 should be stated in a table in terms of CFH at 2 inches water column.

Response

We will consider including such a table after the technology review. At this time, it is sufficient to reference the requirements in TP-201.3.

421. Comment by San Diego

Will the ullage pressure requirements presented in sections 2.2.1.2 and 2.2.1.3 be defined as defects by the executive order? Are these alarm limits consistent with the executive order requirements and approved test procedures? Will compliance testing indicate failures before any alarm is given to the station personnel?

Response

These issues will be addressed during the ISD pilot program. The ullage pressure requirements are linked to the underground storage tank pressure criteria as set forth in CP-201 section 4.6.

422. Comment by Flora

The malfunction criteria defined in sections 2.2.1.2 and 2.2.1.3 should replace those in section 4.6.3 of CP-201.

Response

Section 4.6.3 contains UST storage tank pressure requirements for certification of vapor recovery systems. The ISD Appendix describes criteria for ISD systems

that monitor systems. The purposes are different and warrant separate requirements. No change made.

423. Comment by Flora

Section 2.3.1.2 doesn't explicitly state the required probability of detection (PD) and probability of false alarm (PFA). The method to test the function of the processor is left to the ISD vendor in conjunction with the processor manufacturer.

Response

Processor monitoring parameters will be determined during the certification process.

424. Comment by WSPA

The proposed April 2004 for commencing ISD-triggered shutdown of fueling activity in section 3 should be preceded by a formal ISD Technical Review.

Response

In Resolution 00-9, the Board directed staff to conduct a comprehensive, thorough and rigorous technical review on ISD and other EVR requirements to be completed by April 1, 2002.

425. Comment by WSPA

The list of requirements for the ISD daily report must be fixed at the outset and should not contain the phrase "but is not limited to".

Response

This comment pertains to a draft version of the CP-201 ISD Appendix. The 15-day notice version of the CP-201 ISD Appendix is drafted as the comment suggests.

426. Comment by Veeder-Root and Flora

The text of Section 4 should be updated to conform to the latest report formats. The sample reports should also be updated.

Response

We expect the reporting formats to continue to evolve during the ISD pilot program. No change made.

427. Comment by WSPA

The option for electronic transmission of ISD data should not be included initially; its premature use by air districts has the potential to cause considerable chaos.

Response

We disagree. Electronic transmission of ISD data is a required capability of ISD systems. Access to the data is a separate issue from ISD capability and should be determined at the district level under each district's rules for permitting GDFs as stationary sources.

428. Comment by WSPA

The phrase, "but not limited to", for the stored vapor recovery system conditions in section 7, is inappropriate and must be deleted as ISD system designers must know exactly what requirements they must meet.

Response

We disagree. Data desired for storage may vary depending on the ISD and vapor recovery system. The stored data requirements will be established during the certification process.

429. Comment by Flora

The last section of section 9 says that the ISD system needs to comply with the performance standards under actual field conditions and simulated failures. Section 10 addresses failure mode testing. I suggest that Section 9 is intended to verify that the ISD system demonstrate that it does not produce acceptable levels of false alarms when operating under actual field conditions. Section 10 would mean that the ISD system should detect a failure under actual field conditions at least 95% of the time.

Response

Sections 9 and 10 imply much more than the comment states. The demonstration of the ISD system will require satisfactory completion of a test protocol that is developed after review of the system application. No change made.

TP-201.1 Volumetric Efficiency for Phase I Systems at Dispensing Facilities

430. Comment by San Diego

Section 3.3. The added sentence states, "...the cargo tank headspace volumes should be between 3.0 and 10.0 percent of the total cargo tank capacity...". The word "should" makes this provision unenforceable. Furthermore, bulk terminals and plants are required to have overfill protection devices that prevent spills during the loading operation and to prevent spillage on the road due to thermal expansion of the liquid. This would appear to make this sentence unnecessary.

Response

This specification is intended to ensure that certification test results are not biased, and should not be used to determine compliance with any regulation. The complete sentence reads as follows:

“During the Certification Process for a Phase I system, the cargo tank headspace volumes should be between 3.0 and 10.0 percent of the total cargo tank capacity prior to the delivery.” (emphasis added)

No change made.

431. Comment by San Diego

Section 11. This section prohibits the use of any modification to this procedure for compliance purposes without written authority from CARB. This appears to be in conflict with Federal Law that allows “credible evidence” of a gross violation. Violators will immediately look for the smallest deviation or claim deviations when none exists to avoid paying penalties or correcting major defects in the equipment. This statement makes enforcement much more difficult by emphasizing technicalities over evidence of a mass violation. Furthermore, the issue appears to be adequately covered in Section 15.6 of CP-201. It is recommended this addition to TP-201.1 be deleted as an unwarranted and possibly an illegal interference in local enforcement efforts.

Response

TP-201.1 is intended only for certification of Phase I systems, it is not a compliance test procedure. No change made.

TP-201.2 Emission Factor for Phase II Systems

432. Comment by San Diego

This is a replacement of the procedure adopted by the state board on March 23, 2000. It is not a modification and as such requires a public hearing in front of the state board.

Response

Significant modifications were made to TP-201.2 to reflect the revised EVR proposal that was approved by the Board. As an example, the primary Phase II standard was changed from an emission factor to both an emission factor and an efficiency standard. This required additional measurements and adjustments to calculation of results. Also, language, which did not pertain to measurement of the primary standard, was removed. The scope of the changes that the Board authorized in Resolution 00-9 complies with the Administrative Procedure Act, Government Code section 11346.8 and the changes are sufficiently related to the original text noticed.

433. Comment by San Diego

Section 1. TP-201.2 cannot measure the mass efficiency nor produce an accurate emission factor for gasoline fueling operations (Phase II). The procedure only looks at the mass-in at the fueling point being tested. The mass-in from simultaneous dispensing at other locations is not estimated even though

this can and has been done in the past through use of RVP samples. TP-201.2 does not measure mass out. It discusses test equipment and installation at the vent, but vent testing was removed in section 9. TP-201.2F contradicts the laws of fluid mechanics and does not take into account the input from evaporation that drives vapors out through leaks. How can TP-201.2 be a mass efficiency when it does not determine total mass in or out of the system? How can it be used to produce an emission factor when total outflow is not measured? Why not require the systems have no detectable leaks during certification testing and measure total outflow?

Response

It is true that only one dispenser is instrumented for calculating the vapor returned to the underground storage tank. This is the same as the current test procedure. The mass-in is determined on a lb/1000 gallons dispensed basis at the instrumented dispenser, which is then extrapolated to the entire station by multiplying by total station throughput. TP-201.2 specifies measurement of mass-out at the nozzle, the vent, the processor (if applicable) and fugitive emissions. Vent testing is still required in section 9 (first paragraph). The efficiency equation in section 12.7 includes measured values at all these emission points. Thus total mass-in and total mass-out are determined by TP-201.2.

434. Comment by San Diego

Section 3.5. Subsection 3.5 excludes dispensing involving less than 6 gallons and exempts the effects of topping off and depressing the nozzle trigger when the nozzle is not fully installed. Is the objective to facilitate passage of the system or is it to determine the actual efficiency expected in the field? Rather than exclude them, why not make note of the events as they occur and take the results into consideration in the certification report?

435. Comment by Husky

Section 3.5. Requires at least 6 gallons be dispensed during the efficiency test. How much do car tanks hold? Will this eliminate too many cars? Look at old tests.

Response to Comments 434 and 435

The minimum six-gallon fueling will better simulate actual fueling practice. Even small vehicles have fuel tanks greater than 10 gallons. Larger vehicles, including SUVs, have much larger fuel tanks. There is no evidence that the 6-gallon minimum will affect completion of the vehicle test matrix. Topping off is considered improper fueling practice and is not appropriate for a certification procedure. Ensuring proper nozzle insertion will provide consistency for system testing.

436. Comment by San Diego

Section 4.2. Where is the supporting documentation for the maximum error values provided?

Response

The documentation (22 pages) for calculation of the maximum error values is available upon request. This information is not normally incorporated in a test procedure.

437. Comment by San Diego

Section 5.1. This section lists flame ionization detectors (FIDs) and non-dispenser infrared (NDIR) instruments calibrated on propane. The San Diego Air Pollution Control District submitted a June 10, 1999 report showing errors with both instruments when used without correction charts. Field errors sometimes exceeded 30%. San Diego recommends calibration with GC analysis. Furthermore, EPA Method 205 is not applicable for gasoline vapors as it recommends an EPA Protocol gas.

Response

We agree that care must be taken to ensure that the instruments measure hydrocarbon emissions accurately. Additional calibration and quality control measures have been added to TP-201.2 to verify that the FID and NDIR analyzers work properly and consistently. It is not practical to calibrate instruments with gasoline vapors, as there are no standards available, so propane will continue to be used for calibration.

438. Comment by San Diego

Section 5.4.3. What are the limits of error for the pressure measuring devices?

Response

Section 6.4 provides criteria for calibration of pressure measurement devices and states that the accuracy of the device shall be 5%.

439. Comment by San Diego

Section 5.4. The procedure calls for hourly barometric pressure readings but does not list a barometer or its limits of error in Section 5-Equipment. Why does TP-201.2 call for barometric pressure readings and corrections, but TP-201.2F does not?

Response

Section 5.11 provides for a pressure measurement device capable of measuring atmospheric pressure to within 2.5 mm Hg. TP-201.2F does not require ambient pressure measurements as the change in pressure of the vapor recovery system vapor space is used to determine the pressure-related fugitive emissions.

440. Comment by Husky

Section 5.6.1. It should be noted that the amount of liquid that will be collected per fueling may not be measurable but it may be allowed to accumulate to a measurable quantity and averaged over the fuelings. Weights and measures also require this information.

Response

The liquid trap is part of the test apparatus and is intended to prevent liquid from contaminating the volume meter. The presence of liquid in the liquid trap may bias the test results for the next fueling, so the trap is drained when liquid is noted. It is not included in the test calculations, nor provided to weights and measures.

441. Comment by Husky

Section 5.6.6. Measuring the temperature at the vehicle tanks fill opening will not determine the temperature of the fuel and vapors in the fuel tank because of the distance of the fill opening from the tank. The temperature taken at this location will be of no value.

Response

The temperature at the fill tank opening is close to the temperature of the gasoline vapors available for capture to the vapor recovery system and can be easily measured. This data is useful in evaluating system performance. No change made.

442. Comment by Husky

Section 5.14. A suitable level and protractor to measure the necessary angles of the rod with the fill opening and ground is needed. A gauge to check the clearance around the fuel opening is also needed.

Response

The suggested equipment has been added to section 5.14.

443. Comment by Husky

Section 9.4.2. Since the fueling is to be conducted by the Executive Officer and not by the customer it is necessary to determine how the nozzle should be positioned in the fill neck. The amount of vapor recovered will be affected by the position of the nozzle in the fill opening. The nozzle may be inserted as far as it will go and be held there, or it may only be inserted to the first latching position on the nozzle spout and released. Also, at what flow should the test be conducted, hand held wide open, or in one of the nozzle hold open positions?

444. Comment by Marconi

Section 9.4.2. "The Executive Officer shall conduct the fueling". This removes the "customer variation" that was once used to justify the use of the then 100-car test over a shed type of test. What procedure will the Executive Officer use

during fueling, full flow versus partial flow, no top-offs versus one or more top-offs, etc.? If no specific guidelines are documented then there could be the introduction of Executive officer variation, i.e. One Executive Officer could run the test differently than another Executive Officer and thus effect the outcome.

Response to 443 and 444

Language has been added to section 9.4.2 to clarify that the fueling shall be conducted "hands off" at the high clip rate with no top-offs. Fuel is dispensed until the first nozzle shutoff after a minimum of six gallons is dispensed.

TP-201.2B Pressure Integrity of Vapor Recovery Equipment

445. Comment by San Diego

Appendix 1, Section 5.1.4. The section references need to be corrected.

Response

The suggested change has been made.

TP-201.2C Spillage from Phase II Systems

446. Comment by Husky

How do you determine what caused the fueling and spitback spillage, the vehicle or the nozzle? The vehicle needs to be a CA legal vehicle. That is, it must meet the EPA fueling standard and the CA fill neck standard.

Response

It is overly burdensome for the tester to verify that each vehicle in a spillage survey meet the standards suggested by the comment. CP-201 section 4.3.2 requires a minimum of 1000 refueling operations to determine if spillage standards are met. Section 7.8.3 requires that the make, model and year of the vehicle be recorded. This information can be used to identify problem vehicle models that can be further investigated. No change made.

447. Comment by San Diego

Section 4.2 equates 20 drops of gasoline to 1 ml. This section discusses the sensitivity of the procedure in drips/fueling event. The relationship of drops to a drip is not clear.

Response

"Drips" and "drops" are both used throughout the procedure and are equivalent terms.

448. Comment by San Diego

Section 7.6 requires recording spill dimensions on a Field Data Sheet. The

district requests that the reference to Form 2 be retained as an example of a field data sheet.

Response

The example remains as part of the procedure, but the reference to it as form 2 has been added in section 7.1, where the reference first appears.

TP-201.2D Post –Fueling Drips from Nozzle Spouts

449. Comment by Husky

The CA fill neck standard requires that the fill neck be at a minimum down angle of 30°. It should be applied to this test procedure.

Response

Section 3.3 states that test results attributable to noncomplying vehicle fillpipes shall not be included.

450. Comment by San Diego

The procedure should specifically identify the pass/fail criteria for a nozzle. CP-201 section 4.1 lists the allowable amount of spillage as 0.42 lbs/1000 gallons dispensed. Is this standard applicable to TP-201.2D?

Response

There is a standard for "dripless nozzles" which is found in CP-201 section 4.7.2. Spillage is a separate standard with a separate test procedure, TP-201.2C.

451. Comment by San Diego

Section 1.1 indicates TP-201.2D is applicable during the certification process. Does this mean the test is limited to certification only? The district would like to use TP-201.2D for compliance testing.

Response

TP-201.2D is designed for certification and is overly burdensome for a compliance test procedure as it requires 10 runs each on a minimum of 10 nozzles. An inspection procedure to assess compliance may be developed separately. As mentioned in the response to comment 351, inspection procedures for compliance purposes for other vapor recovery are to be jointly developed by ARB and the districts through CAPCOA.

452. Comment by San Diego

Sections 2.1, 3.2 and 6.1 require the vapor recovery equipment to be inspected and verified to be in good working order as specified in CCR 94006, but no procedures are referenced to determine good working order, including operation of the nozzle shut-off mechanism. CCR 94006 lists defects that impair

effectiveness of vapor recovery systems. Is it ARB's intent to require every applicable test prior to conducting TP-201.2D, such as A/L, backpressure, etc.? The District recommends performing TP-201.2D on nozzles as found in operation.

Response

TP-201.2D is intended for certification of vapor recovery systems only. ARB staff will determine if equipment is in good working order as specified by CCR 94006.

453. Comment by San Diego

Section 2.2. Can gasoline be dispensed into a test container, such as a 5-gallon can, rather than a vehicle tank? This would allow compliance testing of all nozzles in the facility.

Response

TP-201.2D is not a compliance test. It is important that vehicle fuelings be evaluated during certification testing. No change made.

454. Comment by San Diego

Sections 3.3 and 7.5. Does spitback indicate a defective nozzle? The procedure should address what to do if spitback occurs.

Response

Spitback could be due to the nozzle, the vehicle, or circumstance in fueling or misfueling, such as "topping off." If excessive spitback correlates with failure to meet the dripless standard, the cause would be further investigated. Spitback is addressed in the spillage test procedure, TP-201.2C. No change made.

455. Comment by San Diego

Section 3.3 references noncomplying vehicle fillpipes. The procedure should describe the requirements for a fillpipe or reference the appropriate document.

Response

We agree. The reference has been added in section 3.3.

456. Comment by San Diego

Section 7.2. The District is concerned with liability problems and inefficiencies associated with fueling a customer vehicle. Working with gasoline is inherently dangerous. Spilling gasoline on a customer or vehicle, striking a vehicle with the nozzle, or selecting the wrong grade of gasoline could occur. At some gas stations, waiting for vehicles to arrive would be prohibitively time-consuming. The District recommends the procedure specify optional test equipment including an appropriate receptacle to receive gasoline. This would allow the Districts to conduct the test in a shorter time period and significantly reduce

liability.

457. Comment by San Diego

Section 7. How many times shall a nozzle be tested for compliance purposes?

Response to 456 and 457

TP-201.2D is not a compliance test and will only be used during certification. There is no need for district staff to conduct this test procedure. No change made.

458. Comment by Marconi

During step 7.6.2 is the nozzle to be shaken or kept as still as possible during the 5 seconds? This has a big effect on the number of possible drips.

Response

Section 7.6.2 has been revised to indicate that the nozzle is to be kept as still as possible.

459. Comment by San Diego

Section 11.1 indicates that the test procedure shall not be used to determine compliance unless written approval has been obtained from the ARB Executive Officer. The district requests this written approval.

Response

See response to comment 451 on section 1.1.

460. Comment by San Diego

The field data sheet lists "Spitback, Yes or No", but spitback is not defined in the test procedure. The District recommends the procedure include a definition of spitback or delete spitback from recorded test data if not a parameter of concern.

Response

A definition for "spitback" has been added to D-200.

TP-201.2E Gasoline Liquid Retention in Nozzles and Hoses

461. Comment by Husky

The average liquid retention per fueling during this test will be approximately 0.75 ml. A 10 ml graduated cylinder would have to have 0.05 ml graduations to perform this test with accuracy.

Response

The average liquid retention result results from many readings taken to the nearest 0.10 ml. By convention, readings are taken to the nearest half-graduation. Contrary to the comment, 0.10 ml, not 0.05 ml, graduations are

needed for 0.05 ml readings. No change made.

462. Comment by San Diego

Section 1.1 states that this test procedure is applicable during the CARB certification process. The District has repeatedly requested that all tests be made available for district use if a district so desires to conduct such test.

Response

TP-201.2E is designed for certification and is overly burdensome for a compliance test procedure as it requires 10 runs each on a minimum of 10 nozzles. An inspection procedure to assess compliance could be developed separately. Inspection procedures for compliance purposes for other vapor recovery requirements have already been jointly developed by ARB and district staff.

463. Comment by San Diego

Section 2.1 refers to the “liquid retain”. Both “liquid retain” and “liquid retention” are used throughout the document. If there is no distinction, the district suggests that the same term be used throughout for consistency.

Response

The terms are interchangeable and both are used in practice. No change made.

TP-201.2F Pressure-Related Fugitive Emissions

464. Comment by San Diego

As demonstrated by district calculations, Equation 9 is a contradiction of the Physical Law of Stoichiometry. There are also no provisions in TP-201.2F to measure barometric pressure, which can change one millibar in 20 minutes during a weather change. TP-201.2F can be off by over 300% either way depending on conditions. The district recommends that the system be made gas-tight using helium detection, or some other established method, and that fugitive emissions be quantitated using a material balance.

Response

Large barometric changes are normally associated with a weather front which will also result in ambient temperature changes. As stated in section 7.8, the test results are invalidated if the ambient temperature changes during the 20 minute decay period. Also, section 7.2.1 provides a check that the pressure in the system vapor space has stabilized before the test is conducted.

TP-201.2O Pressure Integrity of Drop Tube Overfill Protection Devices

465. Comment by San Diego

Sections 1.1 and 2.2 list the applicability of this procedure to overfill protection

devices (OPD) located in Phase I product drop tubes. The test should also include the Phase I adapter as leaks from either the OPD or the adapter can significantly affect the system efficiency and can be quantified by this method. The method should be renamed to include the entire drop tube assembly consisting of the OPD and Phase I product adapter.

Section 5.5 requires soap solution be used to detect leaks around the product adapter which implies a zero leak rate for the Phase I product adapter. The district found no reference to the product adapter in CP-201. The district recommends modification of the test procedure to quantify the leak rate of the Phase I product adapter.

Response

Language has been added to section 3.4.1 of CP-201 to indicate that both the vapor and the product adaptor shall not leak. The purpose of TP-201.2O is to determine compliance with the allowable leak rate of the overfill protection devices. Thus, the Phase I product adaptor must be leak-free, or it will interfere with the determination of the OPD leakrate. No change made to TP-201.2O.

466. Comment by San Diego

Section 5.6. The district requests guidance on how to safely vent pressurized UST gasoline vapor using the vapor poppet pressure relief assembly specified. Executive Order G-70-196 recommends using a 6' standpipe for safe venting – is this same equipment recommended for TP-201.2O? The district requests specifications of all safety requirements including grounding requirements for the test equipment assembly.

Response

Test procedures describe the method for establishing a measurement that is compared to a standard or specification to determine if the system qualifies for certification and, in some cases, if it is performing in compliance with applicable regulations. Testers should be familiar with applicable safety regulations. With respect to fire safety, the Health and Safety Code specifies as follows:

“41946 (b) The State Fire Marshal shall be the only agency responsible for fire safety...”

See response to comment 315 also.

467. Comment by San Diego

The field data sheet should include a column to record allowable leak rates or whether the test results were in compliance with applicable standards.

Response

The field data sheet provided is sufficient. Additional information can be recorded in the comment area of the form.

TP-201.5 Air to Liquid Volume Ratio

468. Comment by San Diego

Section 1.1 states “are compatible with the procedure”. The district requests that this be changed to “certified for use with the system.”

Response

TP-201.5 is used both for certification and compliance testing. During certification testing, the district’s suggested language is incorrect, as the equipment is not yet certified. No change made.

469. Comment by San Diego

Sections 2.2.1, 6.7 and 8.2.1 address the absence of leaks at the P/V valve using either liquid leak solution or bagging. Can helium leak detection be used? Or a pressure decay test be performed?

Response

The two options provided for checking leaks are sufficient. If alternative methods are needed, section 11.1 allows for use of other techniques if approved in advance in writing by the Executive Officer. No change made.

470. Comment by San Diego

Section 3.1 refers to A/L adaptor. Adaptor dimensions or part numbers are not described in the procedure or E.O.s. TP-201.5 should reference the appropriate method for measuring damage such as the ring gauge test.

Response

The intent of section 3.1 is to point out an obvious interference with the test procedure. If the A/L adaptor cannot be placed on the nozzle to be tested, then the test cannot be conducted. When TP-201.5 is being used by districts for enforcement purposes, the districts should look to the enforcement provisions in the Health and Safety Code, particularly section 41960.2, and the district’s permitting rules. Appropriate action to address the damaged nozzle spout is outside the scope of the test procedure. No change made.

471. Comment by San Diego

Section 3.8 points out a possible bias if the O-rings are not lubricated. The TP should indicate if this is required or not.

Response

Section 6.5 states that “The O-rings shall be properly greased to ensure a vapor tight connection. Refer to the A/L adaptor manufacturer’s instructions for recommendations. If the O-rings are lubricated before each test, the chance of an improper seal between the nozzle spout and A/L adaptor is reduced.” Thus,

the tester may determine if lubrication before each test is needed, as frequency of greasing may depend on the A/L adaptor and the test conditions. No change made.

472. Comment by San Diego

Section 5.1 states that “A/L adaptor compatible with nozzles”. The TP should list adaptor specifications or give part number.

Response

TP-201.5 is used for both certification and compliance testing. During certification testing, various adaptors may be evaluated to determine which are suitable for the nozzle under certification. Compliance tests should be conducted using the adaptor referenced in the certification Executive Order. No change made.

473. Comment by San Diego

Section 5.1. The length of the 2” ID passage in Figure 1 should be defined.

Response

Figure 1 has been modified to show the 2” ID passage to be between 6 and 18 inches in length.

474. Comment by San Diego

How are the pressure drops required in section 5.2 for the gas volume meter determined?

Response

The pressure drops listed can be obtained from manufacturer specifications and are verified during the volume meter calibrations as provided in section 6.3.

475. Comment by San Diego

Section 5.3 states “nominal inside diameter pipe”. Pipe size diameter is correctly described by pipe diameter x wall thickness. The size described in this section is not the same as that in figure 1 which specifies a 2” ID minimum.

Response

The text in section 5.3 has been revised to be consistent with Figure 1.

476. Comment by San Diego

Section 5.5 states “...dimensions shown in Figure 2 and 3 shall be adhered to in all cases.” Figure 2 describes a 2” ball valve. Are any other sizes allowed?

Response

The 2” ball valve is the only allowable size. Note that a previous comment by the district requested that “recommended” plumbing configurations be changed

to “required” configurations (see comment 332). This change was made to provide consistency for A/L test equipment.

477. Comment by San Diego

Section 5.7. Is lubricant required each time an adaptor is installed on a nozzle?

Response

No, see response to Comment 471.

478. Comment by San Diego

Section 6.1 states “acceptable ground”. The test procedure should describe how an acceptable ground is identified.

Response

Testers who are unfamiliar with proper electrical grounding techniques should not be conducting the test procedure. It is outside the scope of the procedure to discuss electrical grounding. See also the response to comment 315.

479. Comment by San Diego

Sections 6.2 and 7.10 refer to a “troubleshooting method”. Troubleshooting methods are more applicable to background information and not a test procedure.

Response

TP-201.5 is used both for certification and compliance testing. Troubleshooting is common during evaluation tests for certification. Sections 6.2 and 7.10 specifically state that “The A/L test to verify compliance, however, shall be conducted without “bagging” any of the nozzles.” No change made.

480. Comment by San Diego

Section 6.6 describes a pre-test leak check of the A/L adaptor. Section 8.3 describes the post-test A/L adaptor leak check. The test procedure also tests the supply line, gas volume meter and fittings. Test equipment must be disassembled to perform this test, which can introduce leaks in other areas. The district recommends that this test be performed only upon hardware changes or at a less frequent maintenance interval.

Response

During certification testing, it is critical that the A/L adaptor be checked for leaks before and after each test as leaks can significantly bias the test results. The only equipment disassembled is the A/L adaptor, which may be changed to accommodate various vapor recovery nozzles. No change made.

481. Comment by San Diego

Section 7.9 states that adjustments to the test equipment are allowed to insure

measurement accuracy during the three A/L test runs. The district suggests that the prior test run should not be used to determine compliance if the test equipment is adjusted after an out of tolerance value is measured.

Response

The suggested change has been made.

482. Comment by San Diego

Section 7.11 states “drain any condensed gasoline”. How can test personnel differentiate between condensed gasoline vs. a nozzle introducing gasoline into the test equipment as in section 3.5?

Response

If it is not obvious that the liquid gasoline in the test equipment is due to a faulty nozzle, then the gasoline should be assumed to be condensed gasoline. No change made.

EVR 2ND 15-DAY NOTICE: RESPONSES TO COMMENTS

COMPANY	AUTHOR	DATE	NO.
ARID Technologies	Tedmund Tiberi	Jan. 4, 2001	10
DataAction	Gene Mittermaier	Jan. 3, 2001	8
EBW	Peter Violino, Elmer Klop, Jim Biesecker	Dec. 14, 2000	1
EcoVault, Inc.	Paul McWhorter	Jan. 3, 2001	7
Flora Consulting	Jairus Flora, Jr.	Dec. 22, 2000	4
Husky	Arthur Fink	Dec. 26, 2000	3
TOSCO	Robert Staab	Jan. 3, 2001	6
Veeder Root	Robert Hart	Dec. 14, 2000	2
VST	Roger Grantham	Dec. 26, 2000	5
WSPA	Ron Wilkniss	Jan. 3, 2001	9

General Comments

483. Comment by EcoVault

Commenters in international venues have been stymied in their efforts to access and subscribe to EVR information via the Majordomo contact. Mr. McWhorter has attempted to submit timely comments through this avenue and has been unsuccessful.

Response

Thank you for persevering to provide the ARB with your comments despite the difficulty. The Office of Information Technology is continually looking to improve the internet and e-mail capability at the ARB and will attempt to resolve the difficulty for international users.

The Majordomo service, which allows direct e-mail of comments to the Clerk of the Board, was initiated for board items heard after April 2000. The Enhanced Vapor Recovery amendments were heard at the March 23, 2000 board meeting. However, the regulation documents were available for review on the ARB webpage, and the EVR notices provided information on how to submit comments to the Board.

Comments on CP-201

484. Comment by EBW

In Table 3-1, revise the wording to read "Phase I Product Adaptor/Product Elbow Connection" and "Phase I Vapor Adaptor/Vapor Elbow Connection" to

differentiate between the different dual point elbows required for delivery. Similarly, in Table 16-2, change "Phase I Delivery Elbow" to "Phase I Vapor Elbow".

Response

This is a reasonable suggestion but represents a comment on the originally noticed Table 3-1, rather than the modifications to CP-201. We will consider this change in future regulation updates. Please note that in Table 3-1 the words product and vapor are in the text that the commenter cites, but are not repeated as the commenter suggests. No change made.

485. Comment by EBW

Section 3.4.3 requires Phase I adaptors to have performance specifications for the maximum pressure drop at 300, 400 and 500 gpm. EBW wishes to clarify that the performance specifications submitted for EBW's adaptor are based on EBW's vapor elbow and may vary with use of another manufacturer's elbow. Performance may vary due to slight differences in the length of the elbow probe that unseats the vapor adaptor poppet.

Response

We appreciate this information, however, these details in setting specifications are part of the certification engineering evaluation and testing and do not pertain to the proposed regulations. No change made.

486. Comment by Flora and Veeder-Root

The UST Pressure Criteria listed in Table 4-1 are not consistent with the ISD criteria listed in the appendix, but ISD is listed as one of the test methods.

Response

The pressure criteria listed in Table 4-1, and further specified in section 4.6, apply to certification of the vapor recovery system rather than to the ISD system. This section was modified to clarify that it is not intended to exclude or ignore emissions attributable to Phase I operations, but rather to ensure that Phase II systems are not failed because of non-compliant Phase I operations, such as failure of a driver to hook up a vapor return hose, or a defective valve on a delivery cargo tank. The section was earlier modified (first 15-day notice) to allow other methods of data collection and analysis with prior approval of the Executive Officer. No change made.

487. Comment by Flora

In section 4.1.1, change "The emission factor and/or efficiency shall be demonstrate..." to "The emission factor and/or efficiency shall demonstrate..."

Response

Editorial change made.

488. Comment by Flora and Veeder-Root

Equations 4-1 and 4-2 have six significant figures in the exponent term which are not necessary to meet the accuracy of the test method (3% for mechanical gauge or 0.5% for electronic gauge. Rounding the exponent to one decimal place (4 significant figures) will have an insignificant effect on the calculated result.

Response

The equations listed are identical to those that were used to generate the values in the tables in TP-201.3, which was not modified as part of the EVR regulation. No change made.

489. Comment by Flora and Veeder-Root

The statement in section 4.6.2, “pressure does not deviate from atmospheric pressure”, is too vague to implement. Even if the statement is more carefully defined, it is doubtful that it would be effective. This statement may refer to the entry in Table 4-1 of 0 ± 0.05 inches of water column. If so, that should be explicitly stated. However, if that is the case, then the measurement requires a pressure gauge with accuracy better than 10 times smaller than 0.05 inches wc., ie. better than 0.005 inches wc. A pressure gauge that can maintain this accuracy at field conditions is not available.

Flora recommends that this requirement be replaced with a periodic tightness test based on the concepts of TP-201.3, but with a less stringent standard, since such testing should be conducted frequently, such as weekly. Another alternative is an automated test as described in the ISD appendix 2.2.1.4.

Response

Section 4.6 allows alternative methods of data acquisition and analysis with prior approval of the Executive Officer. In addition, alternative methods of verifying the integrity of the system may be proposed as an innovative system. No change made.

490. Comment by Flora and Veeder-Root

The use of daily average and daily high pressure standards in section 4.6.3 is an improvement from previous concepts based on hourly statistics. However, it is not clear whether these statistics are calculated from the 5 second readings or 1 minute averages of the 5 second readings. If the former, then 17, 280 sample values must be computed each day. The daily maximum would be susceptible to spurious or “outlier” readings. The outlier problem would diminish if what is meant is 1,440 readings from 1 minute averages, but could still lead to lots of false alarms. The percentile approach described in ISD Appendix 2.1.2.3 and 2.1.2.4 is preferred. This sets a maximum percentage, such as 5% of the readings or time for which the pressure can exceed the set-point. This approach

allows for two variables to be used in controlling the pressure: the size of the maximum pressure and the proportion of time the pressure can exceed this limit.

Response

One minute averages of the 5 second (or more frequent) readings are acceptable. No change made.

491. Comment by Flora

The requirement in section 4.6.4 to take pressure readings at no more than 5-second intervals is excessive, particularly since the ISD requirement is only to store one-minute averages. The requirement should be to take pressure readings once per minute.

Response

Pressure readings taken a minimum of once every 5 seconds, and stored as one minute averages, provide a more accurate picture of the pressures. No change made.

492. Comment by Husky

The nozzle spout dimensions contained in section 4.7.3 agree with the USEPA standard, but should also comply with the ISO standard number 9158. The ISO standard requires a minimum straight length of the nozzle spout of 3.15 inches and a maximum of 3.74 inches, and that the first anchor point of the nozzle spout be between 3.15 and 3.74 inches.

Response

The intent of 4.7.3 is to ensure nozzles which are certified are in compliance with federal law. The ISO standard is a voluntary standard and does not conflict with the language of 4.7.3. No change made.

493. Comment by Husky

A test procedure is needed for the dynamic pressure drop criteria in section 5.2 so that test results will be comparable and will sum up to the pressure drops found when the components are assembled.

Response

See response to comment 377.

494. Comment by Husky

Section 5.2.3 should not be removed. The cost and danger of causing leaks by disassembling the system in the field to see if the individual components meet the pressure drop requirements is not justifiable.

Response

We agree that field tests of dynamic pressure drop should not involve

disassembling equipment. The individual pressure drop criteria are evaluated only for certification and parts house testing, not for installed systems. Section 5.2.3 was removed, as a modification noticed in the first 15-day notice, as it addressed compliance of installed systems, which is inappropriate for a certification procedure. No change made.

495. Comment by Flora and Veeder-Root

The maximum HC rate to the processor has been increased to 5.7 lbs/1000 gallons. This limit may be appropriate for destructive processors, but Table 8-2 deals with non-destructive processors. The limitation on HC feed rate would severely restrict or eliminate use of membrane type processors. A better approach is to carefully monitor the processor as described in the ISD Appendix section 2.3.

496. Comment by VST

The maximum hydrocarbon feedrate specified in Table 8-1, Table 8-2 and section 8.3 should be deleted for several reasons. The specification has no relation to limiting hydrocarbon emissions from the vapor recovery system, which is CARB's mission. The HC feedrate specification unnecessarily impacts processor design and does so detrimentally. Limiting the HC input to the membrane decreases the efficiency of the separation process. The VST processors as currently designed could achieve system efficiencies of 99+%, and could be improved to 100%, but not with the HC feedrate limitation. In addition, the HC feedrate is not something that can be effectively controlled given the many variables that exist at a GDF. VST field tests have shown that it is not uncommon to see variations of 20% to 40% in the HC content of the UST.

Response to Comments 495 and 496

See response to comment 386.

497. Comment by EBW

Section 9.4.1 requires that vapor recovery system components be permanently identified with a unique serial number. EBW requests that for "non-system specific components", a manufacturing "lot number" be sufficient identification in lieu of the "unique serial number".

Response

This is a comment on the originally noticed CP-201 rather than the modifications to CP-201. Also, section 9.4.1 allows that "specific types of components may be exempted from this requirement if the Executive Officer determines, in writing, that this is not feasible. No change made.

498. Comment by Husky

Section 13.3.2 should not be modified to require a test restart upon failure of a non-system specific component when another construction of that component

has passed the test or is passing the test on the system.

Response

ARB certifies systems, and all components of the system must work properly during certification tests, even if the non-system-specific component has been successfully certified with other systems. No change made.

499. Comment by Husky

The intent of section 13.3.5 is good, but determining that a "change" will result in a significant degradation in the performance of the system by the end of the warranty period is very difficult. For example, if the vapor valve had no leak at the start of the test, but leaked 1% after 1 day, the indication would be by the end of the warranty period that the leak was at infinity. Field testing has indicated that small leaks come and go.

Response

We disagree with the example provided by Husky which implies we will extrapolate changes from one day of testing. Section 13.3.5 states that performance tests are "conducted periodically throughout the operational period", which is a minimum of 180 days, or 6 months. Warranty periods are generally one year. It is reasonable to assess probable performance degradation for one year based on extrapolation of performance over 6 months.

500. Comment by EcoVault

Ecovault requests exemption from CARB decertification under Executive Orders G-70-156 and G-70-157 based on the fact that the tanks exceed the new 98% EVR standards and that due process/equal protection as determined for competitor Oldcastle/FuelVault has not been established.

Response

Section 13.7, which applied EVR standards to aboveground tanks, has been removed from CP-201. A separate rulemaking is planned to address improvements to aboveground tank vapor recovery systems.

501. Comment by Data Action

Under the proposed revised rule 15.2, an oil company cannot sell a gasoline dispensing facility that has an enhanced vapor recovery system manufacturer by a company that undergoes an ownership change until the new owners get the system recertified. This is due to the wording "no person shall offer for sale, sell or install any system or component covered by the certification unless the system or component is recertified under the new ownership." Data Action suggests more specific wording be used rather than "no person" and that provision be made for replacement parts.

How can a gasoline dispensing facility facility owner obtain replacement parts

during the decertification period? The proposed rule 15.2 reason for decertification appears to have nothing to do with the environmental efficiency of the equipment. Not all mergers are “bad” – when a financially strong company buys out a technologically superior company, together they can provide better equipment. Section 15.2 automatically punishes this type of activity by requiring recertification, which can take as long as 2 years to obtain. We both want all equipment to be tested as much as practical under equal conditions.

502. Comment by Husky

Section 15.2 makes CARB-certified products worthless when a company changes hands. The products would have to be pulled from the market until they are re-certified. This would take at least a year and the market would be lost. The certification should only be terminated if there is evidence that the new owners are not building the products to the same specifications.

Response to comments 501 and 502

CP-201 section 19 provides for replacement parts for systems with certifications that lapse or are revoked. ARB agrees that all changes of ownership are not “bad.” However, system certifications are issued to specific applicants, who must show financial responsibility (see CP-201 section 9.1) If the only change is in ownership, the recertification will be accomplished with minimum administrative review in most cases. Additional testing should not be necessary and recertification should take no longer than 120 days as specified in the amended title 17 CCR, section 60030.

CP-201 ISD Appendix

503. Comment by Flora and Veeder-Root

The central vacuum unit generally only operates during dispensing. Consequently, the only time that it can be monitored for operation within the certified range is during dispensing operations. Adding the phrase “during dispensing operations” to the end of the statement in section 2.1.3.1 would make it clear that idle periods are exempt from such monitoring. Similarly, change the first sentence in section 3.1.2.3 to restrict monitoring to dispensing periods.

Response

See response to comment #419.

504. Comment by Flora and Veeder-Root

Section 2.2.1.4 calls for assessing on a weekly basis whether the vapor space leaks at a rate that is 2 times the allowable standard. Flora suggests that the standard be stated in terms of CFH at 2 inches water column.

Response

See response to comment #420.

505. Comment by Flora

The reference to benzene in section 2.3.1.2 should be deleted to be consistent with the modified CP-201.

Response

We agree that CP-201 no longer calls for measurement of benzene, however, it may still be emitted during a processor malfunction. No change made.

506. Comment by Flora and Veeder-Root

The more recent reports developed by the ISD vendor's committee should be used to replace the current ISD attachments.

Response

See response to comment #426.

507. Comment by Flora and Veeder-Root

Section 6 should be revised to improve clarity of the readiness/function code.

Response

We believe the section is sufficiently clear in defining the readiness/function code. No change made.

508. Comment by Tosco

Tosco is very concerned that the ISD Appendix is driving unproven technology. Tosco knows of no system that has been tested and available on the market that meets or claims to meet the proposed regulation. Could we not start with proven, simpler technology, such as pressure monitoring, before mandating more complex systems? Field problems still exist in many monitors with their software and sensors, though these field monitors are much less sophisticated than the proposed ISD provisions.

Response

We readily admit that the CP-201 ISD Appendix represents a technology forcing regulation. That is why the first effective date for ISD monitoring is set in 2003, to allow time to develop and evaluate ISD systems. As the Board directed, a pilot ISD program will be established to provide data for the April 2002 EVR technology review. If portions of the ISD requirements are found to be infeasible, we will revisit the regulation.

509. Comment by Tosco

Section 1.3 is ambiguous since the specification for standardized software is not defined. Additionally, this requirement sets a specific technology requirement that may become obsolete with future development. The requirement for all ISD systems to be RS232 equipped and able to be remotely accessed by undefined

sources may also imply the presumption of noncompliance. Tosco recommends deletion of section 1.3.

Response

Section 1.3 is modeled after the On-Board Diagnostics requirements for automobiles. The standardized software requirement is supported by ISD developers and the districts for the successful implementation of ISD. ISD developers must know the minimum hardware and software requirements to design ISD systems; an RS232 interface is expected to reduce the cost and complexity for accessing ISD data by both the owners and operators of GDFs and the regulatory community. However, the current regulations have the flexibility to adopt new technology and approaches as they are both developed and shown to provide equivalent or better compliance with ISD requirements. No change made.

510. Comment by Tosco

Section 1.6. Obviously, the monitoring strategy in the CP-201 Appendix is the strategy of one equipment supplier. To use one supplier to set a state strategy standard that others must be equivalent to is unreasonable. Equipment suppliers are known for introducing “requirements” that benefit only their product and restrict competition.

Response

The CP-201 ISD Appendix monitoring strategy was developed with the input of many stakeholders, and ISD developers must know the minimum hardware requirements to design ISD systems. The regulations seek to allow maximum flexibility to allow ISD developers to fulfill ISD requirements by describing what, but not how, to measure and monitor; however, the monitoring strategy may be modified based on results from the ISD Pilot Program. No change made.

511. Comment by Tosco

Section 1.8 requires an electronic archive of monthly reports for 24 months. Under SB989, regulators are required to visit and inspect each site once per year. Twelve months of monthly data is sufficient since regulators attend the annual source test as part of their annual inspection. More data than 12 months is not needed and may limit technology that may meet all other requirements of ISD.

Response

The ISD Appendix Section 1.5 requires the ISD system to be tested and calibrated annually, with the provision that the annual requirement may be extended if the ISD developer can justify the extension, in which case the requirement to store 24 months of monthly reports is necessary. Furthermore, storing 24 monthly reports is not expected to require significant additional data storage capability. SB 989 (ch. 812, Stats. 1999) requires inspectors to visit and

inspect the UST leak detection systems, but not necessarily vapor recovery systems. No change made.

512. Comment by Tosco

Section 1.9 requires that ISD system be operational at least 95% of the time. Tosco believes the intent of this section is to set standards for actual field operation of an ISD system. Since there are no ISD systems currently in production it is not possible to begin writing operation manuals for these systems. It appears that manufacturers have promised capabilities of a system that will ultimately be the responsibility of the user to deliver. If the manufacturers are confident of their product's performance to meet these proposed regulations, require the manufacturer in the regulations to have an operating warranty to keep the system in compliance for a minimum of 5 years. Section 1.9 should be stricken pending the future ISD technology review.

Response

ISD developers must know to include the capability to record ISD uptime during their ISD design and development efforts. The requirement for the ISD system to be operational a minimum of 95% of the time is to ensure the ISD system is not disabled. No change made.

513. Comment by Tosco

The requirement to monitor the central vacuum unit in section 2.1.2.1 is not necessary due to the requirement to measure ullage pressure in section 2.1.3.2. Tosco recommends that section 2.1.3.1 be deleted.

Response

The requirement to measure UST ullage pressure and the requirement to monitor the central vacuum unit are similar, and may utilize the same sensor, but are not equivalent. ISD system developers and central vacuum unit vapor recovery system manufacturers must know the ISD requirements expected of their systems. No change made.

514. Comment by Tosco

The 24-month calendar record retention in section 4 is excessive as already stated in our comments on section 1.8. The provision to require monthly reports and period of non-compliance to be capable of being electronically accessed, transmitted and downloaded by unspecified persons opens each site up to potential abuse and misuse of this information.

Response

ISD developers must know the minimum requirements to include in their ISD systems. However, the information contained in the monthly report, as well as other ISD requirements, may be modified at the technology review in 2002.

515. Comment by WSPA

WSPA concerns center on the CP-201 ISD Appendix. WSPA supported the original general requirements for ISD in section 10 of CP-201 (now deleted) which would "allow maximum flexibility in the design of vapor recovery and ISD systems. Subsequent to the March 23, 2000 Board hearing, draft detailed specifications for ISD were prepared, but WSPA notes there were no opportunities for open, public discussion of the proposed ISD requirements. WSPA provided numerous comments on the detailed ISD appendix provided in the September 29 release, but none of their suggestions were incorporated in the December 12 revisions.

Response

See responses to comments 81 and 404-410 for the reasons that no changes were made to the regulations.

516. Comment by WSPA

WSPA supports the Board's directive, in the resolution adopting EVR, that a pilot program be developed to evaluate ISD in several metropolitan areas. However, WSPA disagrees with the establishment of detailed performance specifications for ISD when we have no experience with ISD systems and are not certain which parameters should be monitored to assess vapor recovery system failures. WSPA suggests a more basic approach, using readily available technologies, which can detect gross failures. After gaining experience with the basic system, additional features can be added to improve the ISD system capability. WSPA believes it is essential to reevaluate the approach for developing ISD and implementing the pilot program.

Response

ARB acknowledges that ISD is technology forcing, but the technology forcing approach has led to innovations in many areas of emissions controls including the first vapor recovery systems of the 1970's. If ISD proves to be infeasible, in part or in whole, the technology review in 2002 should be an opportunity to reassess the approach. Unlike WSPA, other commenters and stakeholders desired the specific performance criteria that the ISD regulations outline. No change made.

517. Comment by WSPA

Many of the precise specifications in the proposed requirements (e.g., the need to detect A/L ratios below "75" percent of the lower certification value, a "1" percent maximum probability of a false alarm, etc.) are seemingly arbitrary, and suffer a lack of credibility due to lack of stakeholder discussion and input.

Response

The ARB met with manufacturers to apply the "lessons learned" from 20 years of UST leak detection system experience to the ISD regulations. The numerical

values for identifying A/L ratio thresholds and false probabilities were established after reviewing the accuracy of currently available measurement devices, and to prevent a high likelihood of triggering false alarms. Numerical values are necessary for ISD system developers to design and build ISD systems that will identify vapor recovery system degradation and failure, yet not produce false alarms. No change made.

518. Comment by WSPA

The 5 second interval for pressure readings is arbitrary and unnecessary. CEMS on major sources measure and record emissions on a minimum frequency of once every 15 minutes.

Response

There is confusion between the parameter measurement interval and the frequency of stored measurement. The standard is based on hourly pressure averages. In current ARB monitoring, pressure measurements are taken at 1-second intervals and stored as 1-minute averages for several weeks. The SCAQMD Rule 2011, Chapter 2 contains the requirements for CEMs at major sources. These requirements specify that raw data points are averaged over the 15-minute interval. Section 5 of Part B provides the requirements for valid data points (emphasis added):

Raw data shall be gathered from the monitors at equally spaced intervals. The Facility Permit holder shall specify, within the test report for a Relative Accuracy Test Audit of a CEMS, the frequency of data gathering in a 15-minute interval. This data gathering frequency shall remain the same throughout the period following the Relative Accuracy Test Audit until a subsequent Relative Accuracy Test Audit is conducted with a different specified frequency. The specified frequency shall be the frequency for data gathering to constitute continuous measurement.

All valid raw data points gathered from the monitors within a 15-minute interval shall be used to compute a 15-minute average emissions data point. If only one valid data point is gathered within a 15-minute interval, that data point shall be used as the 15-minute average emission data point. No invalid data points may be used to compute the 15-minute average emission data point. A valid 15-minute average emission data point must further be based on a minimum of one valid raw data point.

No change made.

519. Comment by WSPA

The first ISD pilot program meeting, held on December 20th, was attended by representatives from four air districts, CIOMA and WSPA. Representative of the comments, was the remark made by one air district representative that it would be preferable to have simpler ISD systems, capable of detecting gross failures, and to have them as soon as possible. There were no dissenting opinions in

regard to this issue; no one supported the current "Taj Majal" approach.

Response

The ARB agrees that reliable ISD systems are critical for the success of ISD. The proposed approach verifies the vapor recovery system is properly functioning; that is, the vapor recovery system captures and contains vapors from refueling operations, verifies the processor (if installed) is properly functioning, and records and reports the results. Based on preliminary ISD test site data, an ISD system capable of detecting gross failures can also detect degradation without additional complexity. Technically challenging requirements will be investigated during the Pilot Program; the Pilot Program data will be evaluated to determine if the current requirements cannot be technically achieved or are cost-prohibitive. No change made.

520. Comment by WSPA

There are no emission reductions attributable to ISD. This fact is germane in any consideration of options for re-crafting the ISD specifications.

Response

We disagree. As shown on page 2 in the staff report, ISD is estimated to result in emission reductions of 6.6 tons. This is due to improving the in-use efficiency of vapor recovery systems, which field studies have shown are not operating at the 90% efficiency assumed in the emission inventory.

521. Comment by WSPA

It appears there are only two or three equipment manufacturers working on ISD systems. Our understanding is that the ISD systems under development will be limited to specific situations, leaving the majority of RGOs with no option. The limited interest by manufacturers is due to the complex, technology-forcing performance specifications of the current ISD Appendix.

Response

Under Health and Safety Code section 41956.1, installed "retail gasoline outlets (RGOs)" will have until April 2007 to install ISD systems if the requirement is not modified pursuant to the April 2002 technology review or at some later date. No change made.

522. Comment by WSPA

At the Dec. 20th meeting, ARB staff assured the participants that 1) the performance capabilities in the ISD appendix are serious goals, but that production systems will not necessarily have to meet all of them, 2) performance specifications may change as a result of the Tech-Review, and 3) equipment manufacturers are aware of these caveats. However, WSPA believes staff lacks the authority to "soften" the effect of the ISD appendix as the specifications are adopted as regulations. It does not seem fair to equipment manufacturers to

devote resources to technologies which may be unachievable, costly, or not beneficial.

Response

Amendments to CP-201 Appendix for ISD will be considered by staff and presented to the Board if ISD technology proves infeasible in part or in whole. See pages 59-76 of the FSOR for detailed responses to comments that explain ARB's view that ISD, although technology forcing, is a reasonable approach. No change made.

523. Comment by WSPA

WSPA wants reliable ISD systems that provide useful information. WSPA expects that based on other improvements in vapor recovery equipment, and the increase of ORVR vehicle penetration, ISD will soon outlive it's usefulness.

Response

We disagree. It will take many years before the majority of gasoline throughput is dispensed to ORVR vehicles. Although we concur that the improved certification process will lead to increased durability of vapor recovery equipment, acceptable emission control is only achieved if the in-use vapor recovery systems are installed, maintained and operated properly. ISD will allow monitoring of the vapor recovery system to ensure emissions are truly controlled.

524. Comment by WSPA

WSPA suggests that the ISD specifications be bifurcated into "core" requirements and "optional goals", where core requirements identify gross failures and could likely be achieved quite rapidly using existing technology. Clarify the "optional goals", though desirable, may change as a result of the tech review and further assessments of feasibility, benefits and costs.

Response

See response to comment 516.

525. Comment by WSPA

Establish guidance for an evaluation of the cost of ISD which will occur during the tech review. This is needed as the customary measure, cost-effectiveness, is not likely applicable since there are no emission reductions attributable to ISD.

Response

As stated above, there are emission reductions associated with the implementation of ISD. The cost-effectiveness analysis, which includes ISD, is contained in section VI of the staff report.

526. Comment by WSPA

Provide formal notification for all stakeholders that final specifications for "production" ISD system will not be established until the tech-review process has concluded.

Response

The specifications are "final" until amended through subsequent rulemaking action. The notice of the rulemaking is the formal notification for all stakeholders. No change made.

527. Comment by WSPA

Establish a clear and specific feedback mechanism so that the lessons learned from the ISD pilot program result in appropriate changes to the ISD specifications.

Response

The ARB has initiated the ISD Pilot Program with WSPA and CAPCOA to fulfill ARB Resolution 00-9. The ISD Pilot Program will evaluate the performance and cost-effectiveness of pilot ISD systems at the technology review in 2002.

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528. Comment by Husky

Section 9.4.2 should state how far the nozzle is to be inserted into the vehicle fill neck. A balance nozzle will automatically latch at the minimum distance because of the bellows. An assist nozzle may be inserted until the latch ring or spring contacts the unleaded restrictor or inserted only until it latches in place, a difference of about 2 inches that will have an effect on the amount of vapors collected.

Response

The nozzle manufacturer's operating instructions will be used to determine how the nozzle is latched in place.

529. Comment by Data Action

Section 9.4.2 states that "the Executive Officer shall conduct the fueling". For consistency in the results, some guidance should be provided on which notch on the nozzle tube is to be so engaged before the hands are removed from the nozzle. Because of the difference in vehicle fill openings, Data Action suggests that "the nozzle is to be inserted as deeply as in can be latched on to the fillpipe to insure consistent test results and that the nozzle doesn't fall out during refueling."

Response

See previous response.

