

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

Public Hearing to Consider Proposed Amendments to Enhanced Vapor Recovery Regulations for Gasoline Dispensing Facilities

Public Hearing Date: December 10, 2020
Agenda Item No.: 20-13-3

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This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

I. General

The Staff Report: Initial Statement of Reasons for Rulemaking (staff report), entitled Proposed Amendments to Enhanced Vapor Recovery Regulations for Gasoline Dispensing Facilities, released October 20, 2020, is incorporated by reference herein. The staff report contained a description of the rationale for the proposed amendments. On October 20, 2020, all references relied upon and identified in the staff report were made available to the public.

In this rulemaking, the California Air Resources Board (CARB or Board) is adopting amendments to the enhanced vapor recovery (EVR) regulations that refine parts of the EVR regulations to improve cost effectiveness, preserve the current level of air quality benefits, and clarify and improve the certification and test procedures for better regulatory certainty and enforceability.

On December 10, 2020, following a 45-day comment period, CARB held a public hearing to consider the proposed regulation "Proposed Amendments to Enhanced Vapor Recovery Regulations for Gasoline Dispensing Facilities" described in the staff report and associated Notice of Public Hearing (45-Day Notice). The regulation requirements are set forth in California Code of regulations, title 17, §§ 94010, 94011, 94016, and 94017.

Written comments were received from two organizations during the 45-day comment period. Five oral and/or written comments were presented by individuals or organizations. At the conclusion of the hearing, the Board adopted Resolution 20-36, which approved the regulation for adoption.

Resolution 20-36 directed the Executive Officer to determine if additional conforming modifications to the regulations were appropriate. If so, the Executive Officer was directed to make the modified regulations (with the modifications clearly identified) and any additional documents or information relied upon available for a supplemental 15-day public comment period. The Executive Officer was directed to consider any comments on the modifications received during any supplemental 15-day public comment period. The Executive Officer was then authorized to: either (1) adopt the modified regulation as it was made available for public comment, with any appropriate additional modifications; or (2) make all additional modifications available for public comment for a period of at least 15 days and present the regulations to the Board for further consideration, if warranted.

After the December 10, 2020, public hearing, CARB staff conducted a new engineering evaluation in response to comments on two CARB test procedures, TP-201.1C Leak Rate of Drop Tube/Drain Valve Assembly, and TP-201.1D Leak Rate of Drop Tube Overfill Prevention Devices and Spill Container Drain Valves. Based on the engineering evaluation results, CARB staff proposed modifications to the originally proposed regulatory amendments to TP-201.1C and TP-201.1D. CARB staff also added a revised technical support document to the rulemaking record to incorporate

the engineering evaluation results. The text of the proposed modifications to the originally proposed regulatory amendments and revised technical support document were made available for a 15-day public comment period by issuance of a "Notice of Public Availability of Modified Text" (15-Day Notice). The 15-Day Notice, modified regulatory language, and additional supporting document were posted on May 4, 2021, on CARB's website <https://ww2.arb.ca.gov/rulemaking/2020/evr2020>, accessible to stakeholders and interested parties. The 15-day comment period ended on May 19, 2021. There were no comment letters received during this period.

When the 15-Day Notice and all attachments were posted on CARB's website, they were also electronically distributed to all persons that subscribed to the CARB email subscriber list: "Vapor Recovery Program." The "Vapor Recovery Program" list includes all persons who submitted oral or written comments during the 45-day comment period or public hearing, or requested notification of any proposed changes, per section 44(a), title 1, California Code of Regulations, and Government Code section 11340.85.

This Final Statement of Reasons (FSOR) updates the staff report by identifying and providing the rationale for the modifications made to the originally proposed regulatory text. The FSOR also contains a summary of the comments received during the formal rulemaking process by CARB on the proposed amendments or the process by which they were adopted, and CARB's responses to those comments.

A. Mandates and Fiscal Impacts to Local Governments and School Districts

The Board has determined that this regulatory action will not result in a mandate to any local agency or school district the costs of which are reimbursable by the state pursuant to Part 7 (commencing with section 17500), Division 4, Title 2 of the Government Code.

B. Consideration of Alternatives

Government Code section 11346.2 subsection (b)(4)(A) requires that CARB consider reasonable alternatives that "include, but are not limited to, *alternatives that are proposed as less burdensome and equally effective in achieving the purposes of the regulation* in a manner that ensures full compliance with the authorizing statute or other law being implemented or made specific by the proposed regulation" (emphasis added). For the reasons set forth in the staff report, in staff's comments and responses at the hearing, and in this FSOR, the Board determined that no alternative considered by the agency would be more effective in carrying out the purpose for which the regulatory action was proposed, or would be as effective and less burdensome to affected private persons, or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provisions of law than the action taken by the Board.

As described in the staff report, the purpose of the proposed amendments is to:

- Improve the cost-effectiveness of gasoline dispensing facility (GDF) vapor recovery systems without impacting their emissions reduction benefits by eliminating ineffective in-station diagnostic (ISD) overpressure alarm criteria from ISD system software;
- Preserve emission reductions from the superior performance accomplished by current nozzle equipment manufacturers;
- Improve enforceability of EVR regulations by requiring vapor recovery equipment manufacturers to provide a physical sample of the system or components that successfully comply with applicable performance standards or specifications at the time of certification; and
- Clarify and improve the certification and test procedures for better regulatory certainty and enforceability.

As discussed in Chapter IX of the staff report, CARB evaluated several alternatives to the proposed amendments. The Executive Officer evaluated five additional alternatives recommended in a comment letter submitted to CARB during the 45-Day Notice comment period (section IV.A.2 in this FSOR) and in comments submitted during the Board Hearing (section IV.B.2 in this FSOR):

- Require GDFs to install high-capacity vapor processors to eliminate fugitive and vent emissions to further reduce GDF emissions, rather than focus the rulemaking on improving cost effectiveness. (See Comment #5 on page 26.)
- Modify the current ISD overpressure alarm criteria, rather than eliminate them. (See Comment #13 on page 34.)
- Require ISD systems to determine site-specific monthly emission factors for both volatile organic compounds (VOC) and benzene in pressure driven emissions (fugitive and/or vent emissions) and to quantify site-specific emission levels based on site-specific throughput, in addition to the above recommendation to modify the current ISD overpressure alarm criteria and the proposed amendments to improve the monthly pressure data summaries and data storage requirements to make stored information more useful. (See Comments #14 and #31 on pages 34 and 40, respectively.)
- Adopt new and more stringent performance standard(s) defined as monthly benzene and VOC emission limits that would apply to different categories of GDFs based on their gasoline throughput, designed to require additional emission reductions from the GDFs. (See Comments #24, #26, and #30, on pages 43, 46, and 49, respectively.)
- Have CARB staff physically inspect field-installed vapor recovery equipment to ensure conformance with previous specifications, rather than require vapor

recovery equipment manufacturers provide a physical sample at the time of certification. (See Comment #18 on page 39.)

The Executive Officer determined these additional alternatives are not reasonable alternatives to the rulemaking. Sections IV.A.2 and IV.B.2 of this FSOR describe the additional alternatives and CARB's rationale for declining to change the proposed amendments.

II. Modifications Made to the Original Proposal

A. Modifications to Regulatory Text Approved at the Board Hearing and Provided for in the 15-Day Comment Period

The following is the description and rationale for the modifications and clarifications to the original proposed amendments to TP-201.1 C and TP-201.1D, which are incorporated into regulation by reference in California Code of Regulations, Title 17, sections 94011 and 94016. The modifications and clarifications are based on an engineering evaluation performed by CARB staff, which was conducted in response to comments submitted during the 45-day public review period prior to the December 2020 Board hearing. Staff's February 2021 engineering evaluation is added to the revised technical support document, "Pressure-Up Time for Drop Tubes of GDF's Equipped with Remote Fill Configurations, Equation Development and Field Test Verification," described in the next section of this notice. The proposed modifications to TP-201.1C and TP-201.1D are intended to further improve the test procedures to better accommodate remote fill Phase I system configurations.

1. Modifications to TP-201.1D – Leak Rate of Drop Tube Overfill Prevention Devices and Spill Container Drain Valves

a. Substantive Modifications to TP-201.1D

A representative of a company that owns a GDF with the remote fill Phase I configuration commented that the allotted time-to-pressurize specified at five minutes in the proposed testing procedures is insufficient for fill pipe lengths less than 50 feet. The TP-201.1D test procedure is applicable to their GDF because it has both an overfill prevention device and a spill container drain valve. CARB staff's engineering evaluation in response to the comment found that the vertical segment, in addition to the horizontal segment, of the fill pipe assembly must be measured to determine the maximum amount of time allowable, per Table 1 in TP-201.1D ("Time to Pressurize GDF Equipped with Remote Fill Configuration by Product Pipe Assembly Length"). Table 1 provides different maximum pressure-up times based upon ranges of fill pipe assembly length; longer pipe assembly lengths are allowed longer maximum pressure-up times. The testing result could be a false indication of system leaks (i.e., test "failure") if a lower maximum pressure-up time is incorrectly selected from Table 1 because the total pipe assembly length is underestimated by not including the vertical

segment in the measurement. As a result, the below modifications include changes to several parts of TP-201.1D to specify that both horizontal and vertical pipe segments need to be included in the fill pipe assembly length measurement to ensure the correct maximum pressure-up time is selected from Table 1.

The engineering evaluation also determined that it is necessary to add 25 percent to the field measurement of the horizontal segment to account for the underground pipe slope and bends that are not visible on the surface and that do not take a direct route to the remote fill product riser, and to account for the vertical section at the remote fill product riser and access port. The testing result could be a false indication of system leaks (i.e., test "failure") if a lower maximum pressure-up time is incorrectly selected from Table 1 because the total pipe assembly length is underestimated by not accounting for these fill pipe assembly features.

In addition, the engineering evaluation revealed the presence of a restrictor plate and trap door installed below the adaptor within the direct product riser at the GDF. A restrictor plate and trap door are required components for this GDF's configuration, but may not be a requirement for all Phase I systems certified by CARB in the future due to variation in system designs. The presence of a restrictor plate and trap door prevent the measurement of the vertical length of the drop tube portion of the fill pipe assembly using a typical tape measure, and prevent the installation of an inflatable bladder in the drop tube needed to isolate the remote fill spill container drain valve from the overfill prevention device to test the leak rate of the drain valve. As a result, the below modifications include additional text that notes the use of a "tank gauging stick" may be needed to obtain vertical measurements. In addition, the below modifications include instructions for the testing contractor to install an inflatable bladder below the spill container drain valve at the remote fill access point for GDFs with remote fill configurations, rather than in the drop tube. With these modifications, it is not necessary to adjust the allowable pressure-up time to account for the length of the entire product pipe assembly nor reference a pressure-up time table (Table 1) for testing drain valve assemblies at GDFs with remote fill configurations. However, when testing the overfill prevention device, it is still necessary to adjust the allowable pressure-up time to account for the length of the entire product pipe assembly and to reference Table 1.

The following modifications also include new and revised figures, as well as other minor changes to improve accuracy, clarity, and consistency.

- a. In section 3.8, the phrase "product line" was changed to "product pipe assembly." The modification provides clarity given the remote fill product line has both horizontal and vertical segments. In addition, the phrase "bias towards compliance" was replaced with "shorten", in reference to the pressure-up times for product pipe assemblies with diameters smaller than four inches, and the reference to the times in Table 1 was removed. This modification improves the accuracy of the text because narrower pipe

diameters do not bias testing towards compliance, and instead only allow for the entire pipe assembly to pressure up faster.

- b. In section 3.9, four modifications were made:
 - i. The words “accurate” and “(plus or minus ten feet)” were deleted from the first sentence because TP-201.1D is amended later to better address potential uncertainty in horizontal distance measurements made at the surface at the GDF site. (See modification d below.)
 - ii. Text about the use of as-built drawings was deleted because it is redundant with proposed text in TP-201.1D section 6.6.
 - iii. The remaining text was replaced with more detailed language to inform the tester that both horizontal and vertical segments of the product pipe assembly need to be measured.
 - iv. A reference was added to a new Figure 6A, described further in modification l below.
- c. In section 5.10, “Tape Measure” was replaced with “Length Measuring Device”, and explanatory text with examples was added. These modifications are necessary to inform testers that a measurement tape, tank gauging stick, and/or other measuring device may be needed for direct field measurements of horizontal and vertical pipe lengths within the remote fill product pipe assembly. Language to clarify the use of a “tank gauging stick” was added for when the vertical segment has a restrictor plate and trap door below the adaptor within the direct product riser. The remaining text about how measurements should be taken was deleted because it is redundant with proposed text in section 6.6.
- d. In section 6.6, language was added to (a) clarify that there are two segments, horizontal and vertical, to the product pipe assembly, and (b) provide additional instruction for their measurement, including a new step to include an additional 25 percent to field measurement of the horizontal segment, as described at the beginning of this section. Equation 6-1 was added to illustrate how to determine the total run length of the remote fill product pipe assembly, including the addition of 25 percent to the field measurement of the horizontal segment, to improve clarity by providing an example equation for the testing contractor.
- e. In section 7.12.2, the text “if equipped” was added after “drain valve” in the sentence, “No further testing shall be conducted until the leak rate of the drain valve, if equipped, can be determined”, to clarify for the testing contractor that this procedure step is relevant only if the GDF’s fill pipe assembly includes a drain valve.

- f. In sections 7.2.2.1, 7.11.1.2, 8.1.2.1 and 8.10.1.2., “70.79 ml/min” was changed to “71 ml/min” because typical flow meters used by testing contractors are not equipped with sufficient resolution or sensitivity to provide flow measurements in milliliters (ml) with two decimal places. Furthermore, section 10 of the test procedure uses whole numbers when referring to ml/min.
- g. Modifications were made throughout sections 8.2 through 8.7 to instruct the testing contractor to install the inflatable bladder below the spill container drain valve at the remote fill access point for GDFs with remote fill configurations, rather than in the drop tube, and to refer to the same maximum allowable pressure-up time (five minutes) used for GDFs with direct fill configurations. The modified test procedure for testing drain valves at GDFs with remote configurations is now the same as for GDFs with direct fill configurations with just one difference: the location of inflatable bladder installation. The modified text includes a reference to a new figure (Figure 6B, described further in modification l) to further describe where to install the inflatable bladder, which improves clarity for testers.
- h. In section 8.8, text was added to clarify that the procedure includes the entire remote fill product pipe assembly, not just the drop tube.
- i. In section 8.11.2, the text “if equipped” was added after “drain valve” in the sentence, “No further testing shall be conducted until the leak rate of the drain valve, if equipped, can be determined”, to clarify for the testing contractor that this procedure step is relevant only if the GDF’s fill pipe assembly includes a drain valve.
- j. In section 8 Table 1, text was added to the table column heading to improve clarity and consistency. The word “Horizontal” was replaced with “Total” and the word “Piping” was replaced with “Product Pipe Assembly” because both horizontal and vertical segments of the remote fill product line need to be included in the length measurement. In addition, the text “Product Pipe Assembly” was added to the title of Table 1 to maintain consistency with prior text within the procedure.
- k. The text “for Direct Fill Configuration” was added to the Figure 2 title, and the figure was replaced with a diagram that has thicker lines and darker shading, to improve clarity. No changes to diagram labels or features were made.
- l. A new figure, “Remote Fill Product Pipe Assembly Consisting of Two Segments” was added as Figure 6A. Figure 6A depicts a cross sectional view of a typical remote fill product piping assembly with annotations that describe how to measure the vertical and horizontal segments. In addition, a new figure, “Typical Inflatable Bladder Installation for Remote Fill Configuration” was introduced as Figure 6B. Figure 6B depicts where the

inflatable bladder should be placed when testing the leak rate of the drain valve at GDFs with remote fill configurations. Figures 6A and 6B are necessary to clarify pipe length measurements and bladder placement for testers.

- m. The sixth row of Form 1, the row with "For GDF equipped with Remote Fill Configuration, length of remote fill product run (feet)", was replaced with a more detailed section with check boxes for the tester to indicate if the GDF is equipped with remote fill configuration and form fields to record measurements of horizontal, vertical, and total length of the remote fill product pipe assembly. These modifications are necessary to prompt testers to measure both horizontal and vertical segments of the remote fill product line because both measurements should be included in the total length measurement used to determine the maximum pressure-up time.

b. Non-substantive Modifications to TP-201.1D

- a. In section 5.8.1, edits were made to improve clarity when referring to the product adaptor test cap, and a reference to the new Figure 6A was added to provide additional clarity. These modifications do not change the testing requirements.
- b. The phrase "(DIRECT FILL CONFIGURATION)" was added to the title of section 7 to improve clarity, given the next section (section 8) is specific to remote fill configurations.
- c. In sections 7.2.2.1, 7.11.1.1, and 7.11.1.2, the text referring to "section 7.2.2.2" was changed to "Section 7.3" to improve clarity and consistency. This modification does not change the testing requirements.
- d. In section 7.11.1, the text "(the option that allows testing the entire drop tube assembly)" was added to the end of the sentence, "Testing conducted per Section 7.2.2.1", to improve clarity and save reading time for the testing contractor (i.e., so that the testing contractor does not need to refer back to the earlier section to determine the content of section 7.2.2.1). This modification does not change the testing requirements.
- e. In section 7.11.2, the text "(the option that allows testing the drain valve, followed by the entire drop tube assembly)" was added to the end of the sentence, "Testing conducted per Section 7.2.2.2", to improve clarity and save reading time for the testing contractor (i.e., so that the testing contractor does not need to refer back to the earlier section to determine the content of section 7.2.2.2). This modification does not change the testing requirements.

- f. In section 8, "Configuration" was added to the end of the section title, "Test Procedure (Remote Fill)," to improve clarity because the phrase "remote fill configuration" is used throughout the earlier sections.
- g. In section 8.1.2.1, 8.10.1.1, and 8.10.1.2, the text referring to "section 8.1.2.2" was changed to "Section 8.2" to improve clarity and consistency and does not change the testing requirements.
- h. In section 8.10.1, the text "(the option that allows testing the entire remote fill product pipe assembly)" was added to the end of the sentence, "Testing conducted per Section 8.1.2.1", to improve clarity and save reading time for the testing contractor (i.e., so that the testing contractor does not need to refer back to the earlier section to determine the content of section 8.1.2.1). This modification does not change the testing requirements.
- i. In section 8.10.2, the text "(the option that allows testing the drain valve followed by the entire drop tube assembly)" was added to the end of the sentence, "Testing conducted per Section 8.1.2.2", to improve clarity and save reading time for the testing contractor (i.e., so that the testing contractor does not need to refer back to the earlier section to determine the content of section 8.1.2.2). This modification does not change the testing requirements.
- j. In section 10, the prefixes of the equation labels were changed from "9-" to "10-" for consistency with the section number.
- k. In the "Test Results" table on Form 1 in TP-201.1D, the column heading text "(See Section 9.2)" was changed to "(See Section 10.2)" so that the correct section is referenced.

2. Modifications to TP-201.1C – Leak Rate of Drop Tube/Drain Valve Assembly

a. Substantive Modifications to TP-201.1C

Though CARB staff's February 2021 engineering evaluation focused on TP-201.1D amendments, its findings led CARB staff to re-consider the proposed amendments for TP-201.1C and to identify a simpler approach for quantifying the leak rate of spill container drain valve assemblies at GDFs with remote fill Phase I configurations that do not have overfill prevention devices. Section 8.1 of the TP-201.1C amendments proposed in 2020 instructs the testing contractor to install an inflatable bladder into the drop tube for both GDFs with direct fill configurations and GDFs with remote fill configurations. The below modifications instead instruct the testing contractor to install the inflatable bladder below the spill container drain valve at the remote fill access point for GDFs with remote fill configurations.

With these modifications, it is not necessary to adjust the allowable pressure-up time to account for the length of the product pipe assembly nor to reference a pressure-up

time table for testing drain valve assemblies for GDFs with remote fill configurations. In other words, the modified test procedure for GDFs with remote configurations is now the same as for GDFs with direct fill configurations with just one difference: the location of inflatable bladder installation. Furthermore, the modifications take into account a finding of the engineering evaluation: if a restrictor plate and trap door are already installed below the product adaptor at the direct fill riser, it is not possible to install an inflatable bladder in the drop tube during testing. The modifications also include new and revised figures to illustrate the placement of the inflatable bladder below the spill container drain valve at the remote fill access point, as well as other minor changes to improve clarity and consistency.

- a. In section 2, a new paragraph was added to instruct the testing contractor to install the inflatable bladder below the spill container drain valve at the remote fill access point for GDFs with remote fill Phase I configurations.
- b. Sections 3.3, 3.4, 5.8, 5.9, and 6.4 are deleted because, as described at the beginning of this section, they refer to measurements and testing equipment that are no longer necessary if the inflatable bladder is installed below the spill container drain valve at the remote fill access point for GDFs with remote fill configurations.
- c. In section 6.2, a new subsection was added to remind the testing contractor that the drain valve assembly at GDFs with remote fill Phase I configurations is located within the remote fill spill container, which is offset some distance from the vertical product riser that houses the drop tube.
- d. At the end of section 7.5.2, the sentence "Proceed to Section 9." was added to improve clarity. This modification does not change the testing requirements.
- e. Modifications were made throughout section 8, including the deletion of the previously proposed Table 1, to instruct the testing contractor to install the inflatable bladder below the spill container drain valve at the remote fill access point for GDFs with remote fill configurations, rather than in the drop tube, and to refer to the same maximum allowable pressure-up time (five minutes) used for GDFs with direct fill configurations.
- f. In section 8.5.2, the sentence "No further testing shall be conducted until the leak rate of the drain valve can be determined." was deleted because it is applicable to TP-201.1D but not to TP-201.1C because TP-201.1C does not apply to GDFs that have an overfill prevention device.
- g. The text in section 8.6 was re-located to a new subsection 9.1.1 in section 9 to improve clarity and consistency. This modification does not change the testing requirements.

- h. The text “for Direct Fill Configuration” was added to the Figure 1 title, and the figure was replaced with a diagram that has thicker lines and darker shading, to improve clarity. No changes to diagram labels or features were made.
- i. Figure 4 was replaced with a new figure that illustrates the location for installation of the inflatable bladder below the spill container drain valve at the remote fill access point for GDFs with remote fill configurations, rather than in the drop tube.
- j. In Form 1, the field for “For GDF equipped with Remote Fill Configuration, length of remote fill product run (feet)” was deleted because this measurement is no longer necessary if the inflatable bladder is installed below the spill container drain valve at the remote fill access point for GDFs with remote fill configurations.

b. Non-substantive Modifications to TP-201.1C

- a. In section 5.6, the term “Inflatable Bladder” was capitalized for consistency.
- b. The phrase “(DIRECT FILL CONFIGURATION)” was added to the title of section 7 to improve clarity, given the next section (section 8) is specific to remote fill configurations.
- c. In the first sentence of section 7, the acronym “GDF” was replaced with “gasoline dispensing facilities” because the acronym is no longer used elsewhere in this test procedure.
- d. In section 8, “Configuration” was added to the end of the section title, “Test Procedure (Remote Fill),” to improve clarity because the phrase “remote fill configuration” is used throughout the earlier sections.
- e. In section 10.1, the prefix of the equation label was changed from “9-” to “10-” for consistency with the section number.

B. Revised Document Added to the Record

In the interest of completeness and in accordance with Government Code section 11347.1, subdivision (a), the following document was added to the rulemaking record and made available for public review during the supplemental 15-day public comment period:

CARB. 2021. Technical Support Document: Pressure-Up Time for Drop Tubes of GDF’s Equipped with Remote Fill Configurations, Equation Development and Field Test Verification. Report prepared by staff of the Vapor Recovery and Fuel Transfer Branch, Monitoring and Laboratory Division, California Air Resources Board (CARB). August 1, 2020, revised February 26, 2021.

This document is a revised version of a technical support document that was previously included in the record. This revised document was added to the record for this rulemaking in anticipation of referencing it in CARB responses to public comments in Chapter IV of this FSOR.

C. Non-Substantive Modifications

Subsequent to the 15-day public comment period mentioned above, staff identified the following additional non-substantive changes to the regulation.

Non-substantive modifications to TP-201.1C:

- In the last sentence of section 1, underline formatting was removed from the word “Facilities” because this word was already included in the test procedure when it was last amended in 2003.
- In paragraph 5.4, strikeout formatting was added to remove a spurious space before the period at the end of the paragraph to correct a typographical error present in the test procedure when it was last amended in 2003.
- In the newly added section 8, underline formatting was added to the section and subsection numbers to provide consistency with the underline formatting of the text.
- Notation in underline and strikeout formatting was added to show how sections 8 through 11 were renumbered to 9 through 12, respectively, as a result of this rulemaking. The section numbers were accurately shown as 9 through 12 in the amended text provided with the 15-Day Notice.
- In section 9 (renumbered to section 10), the notation “~~9~~10.2” was added before the text, “Commonly used flow rate conversions,” because the subsection number was inadvertently omitted from the text provided with the 45-Day and 15-Day Notices.
- Figures 1, 2, and 3 were moved from section 5, and Figure 4 was moved from section 7, to follow section 11 (renumbered to section 12, which is the last section), to improve ease of reference and readability. The applicability of the figures has not changed, only their location in the document. This change was made in the amended test procedure provided with the 45-Day Notice but the description of the change was inadvertently omitted from the staff report.

Non-substantive modifications to TP-201.1D:

- Notation in underline and strikeout formatting was added to show how sections 6.7, 7.2 through 7.11, and 8 through 11, were renumbered to 6.8, 7.3 through 7.12, and 9 through 12, respectively, as a result of this rulemaking. The section numbers were accurately shown as 6.8, 7.3 through 7.12, and 9 through 12, in the amended text provided with the 15-Day Notice.

- In the renumbered paragraph 7.2.1, notation in strikethrough formatting was added to show how the reference to "Section 7.8" was renumbered to "Section 7.9" as a result of this rulemaking. The section reference was accurately shown as "Section 7.9" in the amended text provided with the 15-Day Notice.
- In the renumbered paragraphs 7.4 and 7.9, notation in underline and strikethrough formatting was added to show how the references to "Figure 4" were renumbered to "Figure 5" as a result of this rulemaking. The figure references were accurately shown as "Figure 5" in the amended text provided with the 15-Day Notice.
- In the renumbered section 7.11.1.2, underline formatting was added to the sentence, "Proceed to 7.12." This sentence was included in the amended text provided with the 45-Day Notice to improve clarity and readability, but the underline formatting was inadvertently omitted. This formatting change does not change any of the actual requirements of the provision.
- In section 8.2, underline formatting was added to the text, "Carefully install the inflatable bladder." This text was underlined in the amended text provided with the 45-Day Notice, but the underline formatting was inadvertently deleted from the same text provided with the 15-Day Notice.
- In paragraph 8.10.1.1, a period was added to the last sentence, "Proceed to section 8.2," to correct a grammatical error.
- In paragraph 8.10.1.2, the word "Section" was added to the last sentence to improve readability and clarity, and in both paragraphs 8.10.1.2 and 8.10.1.2, the section reference number was changed from "8.13" to "8.11" to reference the correct section number. There are no sections 8.12 and 8.13.
- At the end of section 8, underline formatting was added to the text "Table 1" to provide consistency with the underline formatting of the rest of the table title and table text. This text was underlined in the amended text provided with the 45-Day Notice, but the underline formatting was inadvertently deleted from the same text provided with the 15-Day Notice. In addition, three corrections were made to symbols in the last two table rows. In the fifth row, the less than symbol "<" before "200" was replaced with the less than or equal to symbol "≤." In the sixth row, the less than symbol "<" before "200" was replaced with the greater than symbol ">" and the less than symbol "<" before "250" was replaced with the less than or equal to symbol "≤." These corrections provide consistency across the entire table and mirror the symbols used in the table included in the before-mentioned CARB technical support document, *"Pressure-Up Time for Drop Tubes of GDF's Equipped with Remote Fill Configurations, Equation Development and Field Test Verification."* Further, the change to the "less than" symbol before "200" in the fifth row fixes a discrepancy that, if left in place, would make that row seem incompatible with the previous row. Although the regulated community would likely infer the

correct symbols based on the symbols in the other rows, the corrections provide clarity and regulatory certainty.

- Figures 1, 2, and 3 were moved from sections 5, 5, and 6, respectively, to follow section 11 (renumbered to section 12, which is the last section), to improve ease of reference and readability. The applicability of the figures has not changed, only their location in the document. This change was made in the test procedure document provided with the 45-Day Notice but the description of the change was inadvertently omitted from the staff report.
- Underline formatting was added to the Figure 4 title and graphic. Figure 4 was added to the amended test procedure provided with the 45-Day Notice and, although the amended procedure text that referenced the new Figure 4 was correctly formatted with underline, the underline formatting for the figure itself was inadvertently omitted.
- Notation in underline and strikeout formatting was added to the title of Figure 5 to show how the title of "Figure 4" was renumbered to "Figure 5" as a result of this rulemaking. The figure was accurately shown as "Figure 5" in the amended test procedure provided with the 45- and 15-Day Notices.

The above described modifications constitute non-substantial changes to the regulatory text because they more accurately reflect the numbering of sections and correct formatting and grammatical errors, but do not materially alter the requirements or conditions of the proposed rulemaking action.

III. Documents Incorporated by Reference

The EVR regulations set forth in California Code of regulations, title 17, sections 94010, 94011, 94016, and 94017, incorporate by reference the following documents (among others):

- D-200 – Definitions for Vapor Recovery Procedures, amended July 12, 2021, incorporated by reference in 17 CCR, section 94010.
- CP-201 – Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities, amended on July 12, 2021, incorporated by reference in 17 CCR, section 94011.
 - TP-201.1C – Leak Rate of Drop Tube/Drain Valve Assembly, amended on July 12, 2021, incorporated by reference in 17 CCR, section 94011.
 - TP-201.1D – Leak Rate of Drop Tube Overfill Protection Devices and Spill Container Drain Valves, amended on July 12, 2021, incorporated by reference in 17 CCR, section 94011.
 - TP-201.2I – Test Procedure for In-Station Diagnostic Systems, amended on July 12, 2021, incorporated by reference in 17 CCR, section 94011.

- CP-206 – Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities Using Aboveground Storage Tanks, amended on July 12, 2021, incorporated by reference in 17 CCR, section 94016.
- CP-207 – Certification Procedure for Enhanced Conventional (ECO) Nozzles and Low Permeation Conventional Hoses at Gasoline Dispensing Facilities, amended on July 12, 2021, incorporated by reference in 17 CCR, section 94017.

The above listed documents are being amended by the regulation adopted by the Executive Officer and thus the amendment date is the date that the regulation was approved by the Board.

The regulation and the incorporated certification procedures CP-201, CP-206, and CP-207 adopted by the Executive Officer incorporate by reference the following documents:

- Society of Automotive Engineers (SAE), 2019. Surface Vehicle Recommended Practice SAE J285: Dispenser Nozzle Spouts for Liquid Fuels Intended for Use with Spark Ignition and Compression Ignition Engines, as revised by SAE April 2019. Copyrighted.
- SAE, 2019. Recommended Practice SAE J1140: Filler Pipes and Openings of Motor Vehicle Fuel Tanks, as revised by SAE October 2019. Copyrighted.

These documents were incorporated by reference because it would be cumbersome, unduly expensive, and otherwise impractical to publish them in the California Code of Regulations. In addition, some of the documents are copyrighted, and cannot be reprinted or distributed without violating the licensing agreements. The documents are lengthy and highly technical test methods and engineering documents that would add unnecessary additional volume to the regulation. Distribution to all recipients of the California Code of Regulations is not needed because the interested audience for these documents is limited to the technical staff at a portion of reporting facilities, most of whom are already familiar with these methods and documents. Also, the incorporated documents were made available by CARB upon request during the rulemaking action and will continue to be available in the future. The documents are also available from college and public libraries, or may be purchased directly from the publishers.

IV. Summary of Comments and Agency Response

Written comments were received during the 45-day comment period in response to the December 10, 2020, public hearing notice, and written and oral comments were presented at the Board Hearing. No written comments were received during the public comment period for the 15-day modification. Set forth below are the full text of each comment, including every objection or recommendation specifically directed at the regulation, together with an agency response. Slides submitted during the Board

Hearing are included as Attachment A. This chapter is organized into sections A and B to address comments received (a) during the 45-day comment period, and (b) at the December 10, 2020, Board Hearing, respectively.

Listed below are the organizations and individuals that provided comments:

Table 1: Written Comments Received During the 45-Day Comment Period

Commenter	Affiliation	Position ^(a)
Albelda, Burke (December 4, 2020)	Speedway LLC/Marathon Oil (Marathon Oil)	N ^(a)
Tiberi, Tedmund (December 7, 2020)	ARID Technologies, Inc. (ARID)	O

(a) S = Support; N = Neutral; O = Oppose.

(b) Marathon Oil comments requested an adjustment to the proposed test procedure amendments.

Table 2: Oral and Written Comments Presented at the Board Hearing

Commenter	Affiliation	Position
Magavern, Bill (oral)	Coalition for Clean Air (CCA)	S
Tiberi, Tedmund (oral and written)	ARID Technologies, Inc. (ARID)	O
Barrett, William (oral)	American Lung Association (ALA)	S
DesChaux, Beverly (oral)	Electric Auto Association (EAA)	N
Le, Tung (written)	California Air Pollution Control Officers Association (CAPCOA)	S

(a) EAA comments did not address the proposed rulemaking.

A. Comments Received during the 45-day Comment Period

(1) Burke Albelda, Marathon Oil:

- Comment:** I would ask that an additional evaluation be conducted prior to adopting procedures for Remote Fill Phase 1 <sic> System Configurations specifically, test procedures TP-201.1C and TP-201.1D. The allotted time-to-pressurize specified at five minutes in the testing procedures, for offset piping lengths is less than 50 feet, is insufficient to meet the requirements to pass the test. Five minutes may be enough to pressurize the length of a vertical drop tube however, when the remote fill pipe lengths exceed that these procedures do not accommodate for the additional volume in the fuel delivery pathway. I would request that additional testing by Air Resources Board, at gasoline dispensing facilities with remote fills, be conducted to aid in the drafting of a table in the

amendment that accurately reflects actual time-to-pressurize in offset fuel delivery pathways shorter than 50 feet. [Marathon Oil]

Agency Response: In response to this comment, CARB staff contacted Marathon Oil to obtain supporting information and conducted an additional engineering evaluation of the remote fill Phase I configuration at the GDF where Marathon Oil found piping runs less than 50 feet required additional time to pressurize. CARB staff's engineering evaluation found that the vertical segment, in addition to the horizontal segment, of the fill pipe assembly must be measured to accurately determine the maximum amount of time allowable to pressurize, per Table 1 in TP-201.1D "Time to Pressurize GDF Equipped with Remote Fill Configuration by Product Pipe Assembly Length". When vertical segments, in addition to horizontal lengths, were included in the measurements of fill pipe lengths for the underground storage tanks (UST) at the Marathon Oil site, the total lengths exceeded 50 feet. Table 1 in TP-201.1D specifies more pressure-up time for fill pipe assembly lengths longer than 50 feet. The Table 1 pressure-up times are sufficient for the Marathon Oil site to meet the requirements to pass the test when the vertical segments are included in the total fill pipe assembly length.

As described in section II.A.1 of this FSOR, several modifications were made to TP-201.1D to specify that both horizontal and vertical pipe segments need to be included in the fill pipe assembly length measurement to ensure the correct maximum pressure-up time is selected from Table 1. The modifications to TP-201.1D are intended to further improve the test procedures to better accommodate remote fill Phase I system configurations. CARB staff's additional engineering evaluation is added as a revision to the technical support document, "Pressure-Up Time for Drop Tubes of GDF's Equipped with Remote Fill Configurations, Equation Development and Field Test Verification," described in section II.A.3 of this FSOR. The revised document was added to the rulemaking record and made available for public review during the supplemental 15-day public comment period.

(2) Tedmund Tiberi, ARID:

- 2. Comment:** December 2020 Letter, Background - ARID Technologies, Inc. has actively worked with the Monitoring and Laboratory Division Staff in a constructive manner since 1993. We have devoted a great deal of time, effort and expense to helping MLD Staff understand, measure and mitigate gasoline storage tank vapor emissions. We have shared both our theoretical and practical experience gained in this field from our global efforts and our ongoing study of actual data gathered from fuel stations in Taiwan, Japan, Kuwait, Italy, Switzerland, Luxembourg, and Germany.

ARID has pioneered the use of selectively permeable membranes to minimize vapor emissions comprised of VOC's (Volatile Organic Compounds) and HAP's (Hazardous Air Pollutants). In October 2006, our Permeator system earned CARB approval (ORVR Compatibility) with Executive Order G-70- 209. In November 2014, we initiated EVR Certification in response to a request by a large hypermarket fuel marketer, and in November 2019 our Permeator system earned CARB approval (Phase II EVR) with Executive Orders VR-201-Z and VR-202-Z.

Since earning approval last year, ARID has been deploying our Permeator system at California GDF; at present, we have approximately 60 units operating throughout California. The installed systems have eliminated overpressure alarms, including the historically high alarm periods with winter grade fuel over the Thanksgiving Holiday. This interval is especially troubling from an alarm perspective because many GDF operate with reduced hours or close their pumps altogether, where the storage tanks generate large volumes of evaporative vapor thereby overwhelming the fixed capacity of the 400- gallon Healy Clean Air Separator, previously Certified by CARB. The ARID systems installed in California to date have all replaced the design-flawed 400-gallon buffer tanks which allow overpressures to occur and trigger ISD alarms. The storage tank evaporative losses from the approximately 3,000 sites still using the Healy buffer tanks are significant and represent lost fossil fuel, environmental emissions to the atmosphere, soil and groundwater. The negative community health impacts are especially troubling due to the presence of benzene in the emitted vapors. [ARID December 2020 Letter]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. CARB appreciates ARID's efforts to manufacture vapor processors that reduce gasoline storage tank vapor emissions. The following response (sub-bullets a through g) provides clarification and context for several of ARID's points within the above comment and later comments.

- a) CARB certification testing indeed found that the ARID processor is capable of eliminating overpressure alarms and reducing emissions. At the same time, CARB disagrees with the ARID statement that the Healy system with clean air separator (CAS) is "design-flawed"; the Healy system is CARB-certified and complied with state performance standards and specifications during certification testing. In addition, CARB studies concluded that pressure driven emissions do not impact regional and statewide plans to attain ambient air quality standards for ozone. In addition, there are about 2,000 GDFs that do not experience overpressure alarms and would derive no benefit from replacing their existing vapor processors. That means replacing existing pressure management systems with the ARID unit could cost individual operators up to \$100,000 each without making significant emission reductions.

- b) California's Vapor Recovery Program is providing significant emission reductions. The program reduces gas station emissions on a statewide basis by more than 96 percent, and reduces emissions by 360 tons per day, compared to if there were no vapor recovery controls. The proposed rulemaking is intended to refine the program. CARB's rulemaking scope focuses on improving the cost-effectiveness of the EVR regulations because the current in-station diagnostic (ISD) overpressure alarm criteria are not effective at their intended purpose—identify repairable vapor recovery equipment problems—and cause GDF owners to incur alarm response costs that do not result in concomitant air pollutant emission reductions.
- c) As noted in ARID's comment letter, ARID's experience is with hypermarket GDFs in California and GDFs outside California. CARB staff carefully considered all theoretical and empirical information provided by ARID over the years. However, empirical data collected at GDFs outside of California should not be used to characterize emissions from California GDFs for regulatory purposes because it is likely not representative of emissions from California GDFs. California is unique from other states due to the retention of Phase II systems for gas stations where other states have allowed gas stations to decommission the Phase II systems. Other enhancements of California's vapor recovery program include stringent requirements for (a) Enhanced Vapor Recovery systems, including on-board refueling vapor recovery (ORVR) vehicle compatibility and ISD systems that provide real-time monitoring of critical vapor recovery system components and activate alarms that alert GDF operators/owners of potential vapor recovery system failures so that timely corrective action can be taken; (b) permitting inspection and enforcement techniques employed by the air pollution control and air quality management districts (Air Districts); and (c) gasoline composition specifications. Using data collected at GDFs outside of California could lead to estimates that substantially over-estimate emissions from California GDFs.
- d) In addition, experiences at hypermarkets are not applicable to most GDFs in California. Hypermarkets are retail GDFs that typically dispense $\geq 600,000$ gallons per month and are typically owned by big-box grocery stores and mass merchandising stores such as Costco, Sam's Club, Walmart, and Safeway/Vons. As discussed more in the staff report and technical support documents included in the rulemaking record, hypermarkets tend to have the highest overpressure alarm frequencies because they typically close for holidays, close overnight, and stay closed for longer periods than other retail GDFs. Only about 2 percent of all California GDFs, and only about 5 percent of California GDFs with ISD systems, are hypermarkets, and only about two hundred of these

hypermarkets have the Healy system to which ARID refers in the above comment.¹ Further, as indicated by CARB staff's field assessments and analyses, there are likely more than a thousand California GDFs with the Healy system that experience few to no overpressure alarms.²

- e) CARB's rulemaking is based on CARB staff's field assessments and analyses that encompassed hundreds of California GDFs, including hypermarkets, and were designed and implemented with input from industry and Air Districts so they would be representative of California conditions. The goals of the studies were to identify the primary causes of the excessive ISD overpressure alarms and better characterize the magnitude of pressure driven emissions, in order to evaluate alternatives for reducing or eliminating the excessive ISD overpressure alarms. The assessment sites were chosen to provide a good estimate of the average performance across the state, as well as an indication of the potential range in individual site emissions. Since 2013, CARB staff has released 15 study reports for public review. The study findings are summarized in the staff report and detailed in the technical support documents, which are included in their entirety in the rulemaking record.
- f) CARB studies determined that pressure driven emissions are not significant on a regional or statewide basis for several reasons.³ First, the CARB studies found that pressure driven emissions from GDFs do not impact regional and statewide plans to attain ambient air quality

¹ The staff report provides information about the characteristics of hypermarkets, e.g., Table L-2 on page L-4 in Appendix L, and described further on page L-12 and later pages.

² CARB staff estimated more than a thousand GDFs with Healy systems average 3 or fewer ISD overpressure alarms per year based on the estimated number of GDFs with assist (Healy) vapor recovery systems throughout California (staff report Table L-2) and the alarm frequencies based on ISD alarm records downloaded for a recent three-year period (November 2015 through October 2018) by a CARB statewide field survey of approximately 300 retail GDFs throughout the state, as described in these documents included in the rulemaking record:

CARB. 2020b. Multi Year Field Study to Determine Extent of the ISD Overpressure Alarm Issue Occurring at California Gasoline Dispensing Facilities (Mega Blitz of 2013, 2015, and 2018), Report Number VR-OP-G3. Overpressure Study Technical Support Document prepared by staff of the Vapor Recovery and Fuel Transfer Branch, MLD, CARB. August 1, 2020.

CARB. 2020. Estimation of in-station diagnostic system overpressure alarm frequencies for different types of gasoline dispensing facilities based on statewide surveys. Microsoft Excel worksheets compiled by staff of the Vapor Recovery and Fuel Transfer Branch, MLD, CARB. August 1, 2020.

³ The following technical support document, which is included in the rulemaking record, provides a detailed description of CARB staff's evaluation of the significance of GDF pressure driven emissions:

CARB. 2020. Evaluation of Pressure Driven Emissions from Gasoline Dispensing Facilities, Report Number VR-OP-G4. Overpressure Study Technical Support Document prepared by staff of the Vapor Recovery and Fuel Transfer Branch, MLD, CARB. August 1, 2020.

standards for ozone. Second, the studies found that, although pressure driven emissions are higher than estimated at the time EVR regulations were adopted, vapor recovery systems still reduce overall GDF emissions by more than 96 percent, which demonstrates that there is not a significant design problem. Third, pressure driven emissions are predicted to decrease substantially during the next ten years—by about 25 percent during the summer and about 42 percent during the winter. One of the reasons for this predicted decrease is CARB’s 2018 rulemaking⁴ addressed the fundamental design problem with the fill pipe designs of some newer vehicles that are less compatible with vapor recovery nozzles, which caused an increase in overpressure conditions. Fourth, ARID’s comments do not mention another key finding of the CARB studies: All currently CARB-certified nozzles perform much better than predicted for EVR implementation at the time CARB adopted the EVR regulations.⁵ In response to this finding, the proposed rulemaking also establishes a more stringent nozzle spillage standard to preserve the superior performance of the certified nozzles and prevent emissions from increasing. This amendment, along with other amendments to clarify and improve the certification and test procedures for better regulatory certainty and enforceability, all help minimize localized adverse public health impacts. Section D of Chapter II in the staff report further describes the rationale for making the nozzle spillage standard more stringent, and Chapter IV describes all the rulemaking benefits.

- g) CARB staff’s evaluation of the significance of pressure driven emissions focused on ozone standards attainment and did not encompass benzene risk because benzene emissions alone do not determine risk. Benzene risk is calculated on a site-specific, case-by-case basis, and a variety of site-specific parameters must be considered to determine benzene risk. While CARB has the authority to certify vapor recovery equipment, it is the Air Districts that have the primary authority for regulating the

⁴ The following staff report describes CARB’s 2018 rulemaking and is already in the record for the rulemaking described in this FSOR:

CARB. 2018. Initial Statement of Reasons: Proposed Amendments to Enhanced Vapor Recovery Regulations to Standardize Gas Station Nozzle Spout Dimensions to Help Address Storage Tank Overpressure. Report prepared by staff of the Vapor Recovery and Fuel Transfer Branch, MLD, CARB. September 7, 2018.

⁵ The following technical document describes CARB’s certification testing results that demonstrate nozzles are performing much better than the existing nozzle spillage standards. This document is already in the record for the rulemaking described in this FSOR.

CARB. 2020. Evaluation of Nozzle Spillage Certification Data. Technical memorandum prepared by staff of the Vapor Recovery and Fuel Transfer Branch, MLD, CARB. April 2020. Available at: <https://ww2.arb.ca.gov/resources/documents/information-about-proposed-amendments-enhanced-vapor-recovery-regulations>

emissions from individual gas stations including determining acceptable health risk. Air Districts conduct health risk assessments through their permitting programs and determine if additional mitigation measures are required to reduce health risk. Air Districts conduct health risk assessments on a site-specific basis using multiple factors, such as distance to sensitive receptors, meteorology, topography, and monthly gasoline throughput, along with emission estimates. CARB's current rulemaking does not affect benzene emissions because it would not increase emissions from GDFs. Note, the nozzle and fill pipe specifications that the Board adopted in 2018 were designed to reduce instances of overpressure, which will reduce benzene emissions and reduce near source health risk.

3. Comment: CARB Proposed Amendments – In CARB's "Public Hearing to Consider Proposed Amendments to Enhanced Vapor Recovery Regulations", CARB states that "CARB staff is now proposing a suite of amendments that would continue to refine the regulations to improve cost-effectiveness and provide better regulatory certainty and enforceability with no increase in gasoline vapor emissions. The proposed amendments would:

1. Eliminate in-station diagnostic (ISD) system overpressure alarm criteria. The overpressure alarms are not effective in identifying repairable vapor recovery equipment problems, which results in response costs for GDF owners without reducing emissions.
2. Replace the ISD overpressure alarm criteria with requirements for improved monthly pressure data summaries and data storage to make stored information more useful.
3. Allow modern ISD communication ports such as USB or Bluetooth.
4. Make nozzle spillage standard more stringent to preserve the superior performance accomplished by currently certified nozzles and avoid backsliding.
5. Require vapor recovery equipment manufacturers to provide a physical sample of the certified system or components for CARB to archive.
6. Revise Phase I drop tube test procedures to better accommodate longer remote fill configurations.
7. Make various administrative changes to clarify the regulations.

ARID will provide comment on above sections 1, 2 and 5.

Section 1 states, "...the overpressure alarms are not effective at identifying repairable vapor recovery equipment problems, which results in response costs to GDF owners without reducing emissions." This statement is extremely misleading and simply not true. The root cause of the ISD overpressure alarms is storage tank evaporative emissions, which are caused by air ingestion via the EVR Stage II system vent lines. Next, the undersized buffer tank is inadequate to accommodate the storage tank evaporative growth rate, and the problem lies with *fundamental*

design of this gear, not some sort of repairable defect. In addition, prior to the Certification of our robust and commercially proven gear, gasoline marketers in CA were not able to meet the rigorous ISD pressure alarm criteria. However, at present, with the use of ARID's Permeator system, CA fuel marketers are presently meeting the specified pressure criteria. [ARID December 2020 Letter]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. The following response provides clarification and context for several of ARID's points within the above comment.

First, the quoted text from the staff report is true in the context of the purpose of ISD system alarms, which is the focus of this rulemaking. CARB disagrees with ARID's statement that the text is misleading and not true. As further explained in the staff report, the purpose of ISD alarms is to provide GDF operators (gasoline marketers) an early indicator of vapor recovery equipment malfunctions that need maintenance so that GDF operators can better maintain in-use effectiveness of installed vapor recovery systems. The ISD pressure alarm criteria are not used by Air Districts for enforcement, but instead to enable GDF operators to make more timely repairs. Air Districts will, however, take enforcement action against those gas station operators who ignore ISD alarms and continue gasoline dispensing. However, as described in Appendix J of the staff report, CARB staff's analysis of 1,032 overpressure alarm responses found that more than 95 percent of overpressure alarms do not indicate problems that GDF operators can repair and therefore do not accomplish the purpose of ISD alarms envisioned when CARB adopted the EVR regulations. This analysis found that, on a yearly average, a contractor repair response to an overpressure alarm is only effective approximately 5 percent of the time, and that other ISD alarms, routine inspections, and compliance testing would find the equipment problems that could cause excess overpressure emissions. In contrast, the other two ISD alarms for leaks and vapor collection are effective at identifying repairable equipment problems.

Second, it is true that pressurization from the evaporation of gasoline in the storage tanks triggers the ISD overpressure alarms. However, a key goal of CARB staff investigations and field studies was to determine why this pressurization has been occurring more frequently than anticipated at the time the EVR regulations were first adopted. As summarized in the staff report and detailed in the technical support documents included in the rulemaking record, CARB staff investigations and field studies revealed that the ISD overpressure alarms are mainly attributed to the high volatility and evaporation rate of winter blend gasoline, and changes in some newer vehicle fill pipe designs that result in a poor seal between the nozzle and vehicle fill pipe interface. A poor seal at the fill pipe interface increases air ingestion at the nozzle, which increases the evaporation rate of gasoline within the GDF UST headspace and results in

excess pressure driven emissions. These are factors that GDF operators cannot control. However, as noted in the Agency Response to Comment #2, CARB approved regulatory amendments in 2018 for GDF nozzle requirements and vehicle fill pipe requirements designed to reduce air ingestion at the nozzle and associated ISD overpressure alarms and pressure driven emissions. CARB staff analyses indicate that remaining pressure driven emissions do not significantly impact regional and statewide efforts to attain ozone standards. However, CARB staff expects that the high volatility of winter blend gasoline and site-specific factors such as variation in monthly gasoline throughput and limited operating hours (e.g., shut down at night and on holidays, or reduced weekend hours) can cause some GDFs to continue to have ISD overpressure alarms, which result in GDF owners incurring alarm response costs with no concomitant air pollutant emission reductions. Hence the scope of this rulemaking is to improve the cost-effectiveness of the EVR regulations by eliminating the ineffective ISD overpressure alarms.

4. **Comment:** CARB Staff have worked very hard over many decades to earn emissions reductions from many sources, including gasoline dispensing facilities. In proposing an elimination of ISD overpressure alarm criteria, CARB is taking a big step backwards in the control of vapor emissions. [ARID December 2020 Letter]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. The following response provides clarification for ARID's comment.

CARB disagrees with ARID's comment, "CARB is taking a big step backwards in the control of vapor emissions," because the proposed rulemaking would not impact the current EVR regulations' emission reduction benefits. Eliminating the ineffective ISD overpressure alarm criteria does not relax any of CARB's performance standards for certifying vapor recovery equipment. Pressure management will continue to be required as part of EVR regulations and the effective ISD leak and vapor collection alarms will remain. Eliminating the ineffective ISD overpressure alarm criteria would have no effect on pressure driven emissions, and therefore no impact on efforts to achieve and maintain ambient air quality standards. The analysis presented in Appendix J of the staff report found that more than 95 percent of overpressure alarms are not associated with any vapor recovery equipment malfunction that can be repaired by GDF operators, and that other ISD alarms, routine inspections, and compliance testing would find the equipment problems that could cause excess pressure driven emissions.

Further, eliminating the ineffective ISD overpressure alarms would reduce accidental clearing of and operator complacency toward responding to the remaining ISD alarms (for example, nozzle vapor collection, processor operation, and vapor leak detection) that effectively indicate repairable vapor

recovery equipment problems. In addition, as described more in the staff report, the new requirements for expanded pressure data storage and summary requirements to monitor system performance will improve the understanding of site-specific conditions and lead to more effective troubleshooting.

5. **Comment:** Maintaining low tank pressure reduces both fugitive and vent emissions. Rather than eliminate overpressure alarms, state-of-the-art vapor processors can be employed to eliminate the fugitive and vent emissions. [ARID December 2020 Letter]

Agency Response: This comment seems to suggest that CARB consider an alternative rulemaking project. The scope of the current rulemaking is to eliminate ISD overpressure alarms in order to improve the cost-effectiveness of the EVR regulations without affecting their emission reduction benefits. The proposed amendments would be implemented with an ISD system software upgrade; no new hardware would be needed. The new ISD software would be required for all installations at new GDFs and major modifications at existing GDFs, but would be voluntary for existing GDFs. GDF owners and operators would be allowed to choose whether to install the updated ISD software based on their site-specific assessments of potential cost savings and business priorities. For example, owners and operators of existing GDFs could choose to not upgrade the ISD software if their GDFs do not experience ISD overpressure alarms or if the upgrade cost exceeds the cost of responding to ISD overpressure alarms.

In contrast, ARID seems to suggest that CARB require state-of-the-art vapor processors to eliminate fugitive and vent emissions, which would entail establishing new regulations to require more stringent performance standards for vapor recovery systems, and would result in more than 7,000 GDFs being required to install new equipment, including more than 2,000 GDFs that do not experience overpressure alarms. This goes beyond the scope of this rulemaking and does not provide a viable alternative for the rulemaking.

ARID's suggestion to fully control fugitive and pressure driven emissions as a means to eliminate the ineffective ISD overpressure alarm was considered during the preliminary, informal stage of this rulemaking project, but was not pursued because CARB studies determined that pressure driven emissions (i.e., fugitive and vent emissions) are not significant on a regional or statewide basis, and are expected to decrease substantially as a result of CARB's 2018 rulemaking and other factors. Agency Response to Comment #2 further describes the rationale for the scope of this rulemaking.

During the informal stage of this rulemaking, CARB considered a variation of ARID's suggestion—require installation of high capacity vapor processors (HCVP) as the means to eliminate ISD overpressure alarms instead of

eliminating the overpressure alarm criteria from the ISD software—but found that it would have substantially higher costs than the proposed rulemaking. As described in the staff report (Chapter IX section A, Alternative 4), requiring the installation of HCVPs could cost individual GDF operators up to \$101,000 per GDF for equipment, installation, and permitting fees. Maintenance and operational costs can range from a net positive savings for fuel savings for some GDFs with very high gasoline throughput, to net costs higher than \$600 per year for many GDFs. In total, requiring California GDFs to install HCVPs would cost about \$530 million more than the proposed rulemaking, with about \$324 million of that difference (61 percent) incurred by small businesses. See staff report Chapter IX and Appendix L for the full cost analysis for “Alternative 4.” Also, there are about 2,100 gas stations that do not experience overpressure alarms and would derive no benefit from replacing their existing vapor processors. CARB rejected Alternative 4 because of the economic burden it would place on GDFs, many of which are owned by small businesses.

6. **Comment:** Elimination of ISD overpressure alarms will surrender a significant portion of the environmental progress made in recent years. In fact, the early “ORVR Compatibility” certifications along with revision of the pressure-driven fugitive emission factors comprised the cornerstone of CARB’s efforts to minimize both fugitive and vent emissions. Why abandon these efforts now?
[ARID December 2020 Letter]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. The following response provides clarification for ARID’s comment.

No progress will be surrendered by the proposed rulemaking. Pressure management will continue to be required as part of EVR regulations and the effective ISD leak and vapor collection alarms will remain. Eliminating the ineffective ISD overpressure alarm criteria would have no effect on pressure driven emissions. Also, CARB’s 2018 rulemaking addressed the fundamental design problem with the fill pipe designs of some newer vehicles that are less compatible with vapor recovery nozzles, which caused an increase in overpressure conditions. Please refer to the Agency Responses to Comment #2 and Comment #4 for additional discussion for these topics.

7. **Comment:** Unfortunately, it seems that MLD is leaping to an ISD downgrade option before making detailed calculations of cost effectiveness of the presently certified solution relative to historic EVR costs on a dollar per pound of reduced emissions basis. [ARID December 2020 Letter]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. The following response provides clarification for ARID’s comment.

CARB disagrees with ARID's statement that "MLD⁶ is leaping to an ISD downgrade option." The proposed regulatory amendments improve the ISD requirements by eliminating the ineffective overpressure alarm criteria and adding expanded pressure data storage and summary requirements to monitor system performance, which will improve the understanding of site-specific conditions and lead to more effective troubleshooting. Pressure management will continue to be required as part of EVR regulations and the effective ISD leak and vapor collection alarms will remain. The proposed amendments would have no impact on the emission reduction benefits of the EVR regulations. Please refer to the Agency Responses to Comment #2 and Comment #4 for additional discussion on these topics.

Staff report Chapter IX and Appendix L provide detailed calculations of the costs for the proposed rulemaking and alternatives, including the costs of HCVP installation compared to the costs of eliminating ineffective overpressure alarm criteria from the ISD software. However, evaluating the cost effectiveness of present and historic EVR costs on a "dollar per pound of reduced emissions basis" is not relevant for the proposed rulemaking for ISD overpressure alarms because its goal is to improve cost-effectiveness without affecting emissions reduction. On a statewide basis, installing updated ISD software has substantially lower upfront installation costs than installing an HCVP as a way for GDF owners and operators to eliminate their response costs for ineffective ISD overpressure alarms.

- Installing updated ISD software under the proposed amendments has a one-time cost of about \$20 per GDF for the estimated 3,098 GDFs required to install the updated software at the time of new construction and major modifications, and a one-time cost of about \$3,100 per GDF for as many as 3,088 GDFs that CARB staff estimates might voluntarily install updated ISD software. Individual stations could save between \$780 and \$17,000 annually, depending on their current alarm frequencies. The proposed amendments would enable approximately \$32 million to \$109 million in cost savings over its 10-year lifetime for business owners who implement required and voluntary installations of updated ISD software that eliminates ISD overpressure alarm response costs at their GDFs (in the absence of Advisory 405⁷).
- In contrast, upfront costs to purchase and install an HCVP can range from about \$32,000 to \$101,000 per GDF, and maintenance and operational costs can range from a net positive savings for fuel savings for some

⁶ "MLD" is CARB's Monitoring and Laboratory Division, which encompasses CARB's Vapor Recovery Program certification staff.

⁷ The staff report describes Advisory 405 in Chapter II section A.1, Chapter IV section C.1, and Chapter VII (second paragraph on page 77).

GDFs with very high gasoline throughput, to net costs higher than \$600 per year for many GDFs. Requiring California GDFs to install HCVPs would cost about \$530 million more than the proposed rulemaking, with about \$324 million of that difference (61 percent) incurred by small businesses.

In addition, even if HCVP installation and ongoing costs were less than installation of updated ISD software, CARB would remove the overpressure alarm criteria from ISD software requirements. Because the current overpressure alarm criteria are not effective at their intended purpose—identify repairable vapor recovery equipment problems—they should not remain in the current regulations.

Finally, even if HCVPs were more cost-effective on a “dollar per pound of reduced emissions basis” compared to present and historic EVR emissions reduction costs, enacting a different rulemaking project that requires any or all GDFs to install new HCVP equipment would still be considered a creation of “new costs” above current conditions for existing and future GDFs, and the necessity of those new costs would need to be assessed and documented. (Agency Response to Comment #2 describes the rationale for the scope of this rulemaking project.)

Note, the certification status of ARID’s Permeator™ system and other certified HCVPs is not affected by the proposed rulemaking, and these processors will remain options (among other options) for GDF owners and operators. GDF owners and operators can select options based on their assessments of site-specific conditions and business priorities. For example, if owners find that installation of one of the CARB-certified HCVPs would be more beneficial than installation of an ISD software update, the amendments would allow them to do so.

8. **Comment:** In addition, it seems that MLD has not considered localized public health impacts and risks of the pressure driven VOC and HAP emissions (vent and fugitive). [ARID December 2020 Letter]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. The following response provides clarification for ARID’s comment.

When assessing options for the scope of the rulemaking, CARB evaluated updated estimates of the magnitude of pressure driven emissions and potential public health impacts in terms of reactive organic gases (ROG), also referred to as volatile organic compounds (VOC) within the ARID comments. Throughout this document, we use the acronym ROG. ROG, in the presence of sunlight, can react with other air pollutants to form ozone, a criteria air pollutant, and lead to

smog formation. As summarized in the staff report and detailed in the CARB technical support document VR-OP-G4⁸ included in the rulemaking record, CARB studies found that pressure driven ROG emissions, although higher than estimated at the time EVR regulations were adopted, do not impact regional and statewide plans to attain ambient air quality standards for ozone. Pressure driven ROG emissions were evaluated on both a regional and site-specific basis. For example, the evaluation of 32 long-term study GDFs' site-specific pressure driven emission estimates indicates all are less than the most stringent (lowest) Air District/County threshold of significance, and pressure driven emissions do not cause any study site total GDF emissions to exceed the threshold. As a result, CARB focused the rulemaking on improving cost-effectiveness.

Gasoline vapors also contain benzene, which is considered a "toxic air contaminant" (TAC) by CARB and a "hazardous air pollutant" (HAP) by the Federal EPA. The rulemaking would not affect HAP emissions from gas stations. The impacts of HAP emissions from GDFs are not ignored but are assessed by Air Districts for each gas station to determine if additional mitigation measures are required to reduce health risk. Risk is calculated on a site-specific, case-by-case basis, based on a variety of site-specific parameters, and the Air Districts have the primary authority for regulating the emissions from individual GDFs including determining acceptable health risk. The improved ISD pressure report and data storage requirements included in this rulemaking to replace the ineffective ISD overpressure alarm criteria will provide a better tool for Air Districts if they determine it is necessary to evaluate the effect of pressure driven emissions on near source health impacts at a particular site, for example, where ambient air monitoring indicates there may be elevated ambient HAP concentrations. Please refer to the Agency Response to Comment #2 for additional response for this topic.

9. **Comment:** ARID has studied the supporting documentation recently posted to the ARB website, and our review indicates large discrepancies regarding accurate magnitude and temporal variation of the emissions. [ARID December 2020 Letter]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. The following response provides clarification for ARID's comment.

Mr. Tiberi stated that ARID's review of CARB staff's technical documents indicates large discrepancies, but did not provide any additional comment about the nature of the discrepancies, nor submit any critique of the emission

⁸ CARB. 2020. Evaluation of Pressure Driven Emissions from Gasoline Dispensing Facilities, Report Number VR-OP-G4. Overpressure Study Technical Support Document prepared by staff of the Vapor Recovery and Fuel Transfer Branch, MLD, CARB. August 1, 2020.

estimation methods that CARB staff documented in the technical support documents. To discern the cause of the difference between the ARID and CARB estimates, CARB staff carefully reviewed Mr. Tiberi's emission estimate calculations and rationale that he provided to staff in May 2020 and attached again to the December 2020 comment letter.

Mr. Tiberi's emission rate estimates are heavily influenced by a number of assumptions that, per CARB staff field studies, are not characteristic of the majority of California GDFs. While Mr. Tiberi's assumptions may characterize some individual supermarkets, they are not appropriate for developing a statewide average annual emission estimate and could cause a statewide estimate to be substantially over-estimated. As noted in Comment #2, ARID's experience is with supermarkets (e.g., big box retailers) that typically dispense $\geq 600,000$ gallons per month. Only about 2 percent of all California GDFs, and only about 5 percent of California GDFs with ISD systems, are supermarkets.

In comparison, CARB staff's emission rate estimates are based on actual data collected at hundreds of study site GDFs with a variety of throughputs and EVR systems. The CARB studies were designed and implemented with input from industry and air districts so they would be representative of California conditions. Study sites were chosen to provide a good estimate of the average performance across the state, as well as an indication of the potential range in individual site emissions. Therefore, the CARB studies provide a more accurate representation of regional and statewide pressure driven emissions.

10. Comment: In addition, MLD's analysis specific to the "Phase II EVR Assist System" does not consider the air dispersion impact of carcinogenic compounds nor GDF proximity to sensitive receptors and/or environmental justice communities. (I have attached to this submittal a recent study on this topic). [ARID December 2020 Letter]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. The following response provides clarification for ARID's comment.

To clarify, CARB's current rulemaking does not affect emissions of benzene and other carcinogenic compounds because it would not increase emissions from GDFs. Agency Responses to Comment #2 and Comment #8 provide a summary of CARB's rationale for the scope of the rulemaking and evaluation of pressure driven emissions.

CARB staff carefully considered the study paper that ARID attached, "Vent pipe emissions from storage tanks at gas stations: Implications for setback distances", based on two gas stations in the United States, one in the Midwest and one in the Northwest, after it was first released in 2019 and again when

Mr. Tiberi provided it to CARB staff in May 2020. CARB did not cite this paper in the staff report and technical support documents because it was not relevant given the scope of the rulemaking. Furthermore, as described further in response to Comment #2, empirical data collected at GDFs outside of California should not be used to characterize emissions from California GDFs for regulatory purposes because the data are not representative of emissions from California GDFs. California is unique in its combination of stringent requirements for GDF vapor recovery systems design, operation, monitoring, inspection, and enforcement, and gasoline composition specifications. Using data collected at GDFs outside of California could lead to estimates that substantially over-estimate emissions from California GDFs.

- 11. Comment:** The proposed wide-sweeping elimination of the ISD system Pressure Alarms for the entire California GDF population of 10,000 sites seems inconsistent with initiatives designed to minimize localized adverse public health impacts. [ARID December 2020 Letter]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. The following response provides clarification for ARID's comment.

First, there are about 7,800 GDFs equipped with ISD, and about 2,000 GDFs experience no ISD overpressure alarms.

Second, the elimination of the ineffective ISD overpressure alarm criteria would not impact emissions at the approximately 7,800 GDFs with ISD systems installed. The rulemaking does not affect the other two ISD alarms for leaks and vapor collection that are effective at identifying repairable equipment problems. Further, eliminating the ineffective overpressure alarms would reduce accidental clearing of and operator complacency toward responding to the remaining leak and vapor collection alarms. In addition, as described more in the staff report, the new requirements for expanded pressure data storage and summary requirements to monitor system performance will improve the understanding of site-specific conditions and lead to more effective troubleshooting. These benefits, along with the other rulemaking amendments not mentioned in ARID's comments—establishment of a more stringent nozzle spillage standard and other amendments to clarify and improve the certification and test procedures for better regulatory certainty and enforceability—all help minimize localized adverse public health impacts. Chapter IV in the staff report provides a complete description of the rulemaking benefits.

Also, California's Vapor Recovery Program has been in place for more than 40 years and continues to provide significant emission reductions. As described in Agency Response to Comment #2, the program reduces GDF emissions on a statewide basis by more than 96 percent, and reduces ROG emissions by

360 tons per day. However, CARB's certification of vapor recovery systems is not an appropriate method for addressing localized health impacts. Variation in emissions, topography, meteorology, proximity to sensitive receptors, and other factors, make it impossible to precisely regulate near source risk with a statewide program designed to certify equipment for installation at approximately 14,000 GDFs. Air Districts have the primary authority for regulating the emissions from individual GDFs including assessing potential localized health impacts on a site-specific, case-by-case basis.

The pressure reports that are replacing the overpressure alarm criteria in the ISD software will provide the Air Districts with a better tool if they determine it is necessary to evaluate the effect of pressure driven emissions on near source health impacts. Furthermore, this rulemaking does not affect Air Districts' authority to require changes during the permit renewal process, including throughput limits to mitigate risks and stricter performance standards (e.g., provided by Health and Safety Code § 41954(g) and (h)) to protect public health.

12.Comment: CARB is compounding their past errors in judgement; first they certified an EVR system which allowed air to be ingested, next they misjudged the efficacy of the proposed buffer tank solution, and now they are seeking to eliminate their own ISD rules and pressure specifications which were initially designed with great care to ensure proper system operation while minimizing vapor emissions and associated health hazards. [ARID December 2020 Letter]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. The following response provides clarification for ARID's comment.

CARB disagrees with ARID's statement, "CARB is compounding their past errors in judgement..." At the time the before-mentioned Healy system with the clean air separator was certified (2005), there was no issue with excess air ingestion. As described in the staff report (Chapter II section A.1) and summarized earlier in Agency Response to Comment #3, changes in some newer vehicle fill pipe designs resulted in a poor seal between the GDF nozzle and vehicle fill pipe interface, which increases air ingestion at the nozzle. CARB approved regulatory amendments in 2018 for GDF nozzle requirements and vehicle fill pipe requirements designed to remedy this problem. Agency Responses to Comment #2 and Comment #3 provide more discussion on this topic.

Note, the ISD overpressure criteria for UST ullage pressure monitoring are just one of many requirements included in the EVR Regulations that are designed to limit fugitive emissions. These include UST pressure criteria, component leak rate specifications, a limit on fugitive emissions during certification testing

(0.19 pounds emissions per thousand gallons gasoline), specification of maximum vapor to liquid ratio, system-wide static pressure performance specifications, ISD nozzle collection, processor operation, overpressure, and leak assessments, among others. The elimination of the ineffective ISD overpressure alarm criteria will not adversely impact the EVR regulations' emission reduction benefits nor the ability of CARB and Air Districts to regulate fugitive emissions.

13.Comment: We recommend that CARB uses pressure levels of 0.5 iwc and 1.5 iwc for the 7-day, 95th percentile gross pressure and 30-day, 75th percentile degradation pressure ISD metrics, respectively. [ARID December 2020 Letter]

Agency Response: This comment recommends an alternative to the proposed amendments. ARID's recommended assessment criteria are very similar approach to the current ISD overpressure alarm criteria and therefore would not be effective in solving the overpressure alarm problem. The current ISD overpressure alarm pressure criteria are 1.5 inches water column gauge (iwc, or "WCG in CP-201) for at least 5 percent of the time on a weekly basis, and 0.5 iwc for at least 25 percent of the time on a monthly basis. Indeed, ARID's recommended 7-day criterion of 0.5 iwc is lower than the current weekly criterion of 1.5 iwc and therefore likely would cause even more overpressure alarms to be triggered when there is not a repairable equipment problem. For these reasons, ARID's recommended criteria would not achieve the rulemaking goal to improve the cost-effectiveness of the EVR regulations by eliminating ineffective ISD overpressure alarms, and are not a reasonable alternative to the rulemaking.

14.Comment: Section 2 states.... "Replace the ISD pressure alarm criteria with requirements for improved monthly pressure data summaries and data storage to make stored information more useful." This statement is also misleading and not true. The proposed modification to CP-201, sections 9.2.4 (a) and (b) shows potentially useful pressure interval data, but no reference is made to require further integration of this raw data to quantify fugitive and/or vent emissions. For example, Table 9.1 in section TP-201.2F provides valuable correlations for quantifying pressure-driven fugitive emissions, however, no link or requirement to use these correlations is contemplated in the proposed amendments. [ARID December 2020 Letter]

Agency Response: This comment presents a criticism of text in the staff report and recommends an alternative to the proposed amendments.

CARB disagrees with ARID's statement that the staff report text is misleading and not true. The quoted text from the staff report is true in the context of the purpose of ISD system alarms, which is the focus of this rulemaking. As explained in the staff report, the purpose of ISD alarms is to provide GDF

operators (gasoline marketers) an early indicator of vapor recovery equipment malfunctions that need maintenance so that GDF operators can make quicker repairs and better maintain in-use effectiveness of installed vapor recovery systems. However, as described in Appendix J of the staff report, CARB staff's analysis found that more than 95 percent of overpressure alarms do not indicate problems that GDF operators can repair and therefore do not accomplish the purpose of ISD alarms envisioned when CARB adopted the EVR regulations. The enhanced pressure reports and expanded data storage required by the proposed amendments would enable more effective troubleshooting to identify equipment problems and their causes, which ultimately would reduce costs for GDF operators. The Agency Response to Comment #15 summarizes additional uses and benefits of the improved reports and data storage requirements, Chapters II and IV in the staff report provide more information about these and other rulemaking benefits.

CARB considered ARID's suggested alternative "to require further integration of this raw data to quantify fugitive and/or vent emissions," as described by Alternative 2 in the staff report (Chapter IX section A). ISD reports with site-specific emission rates would provide a more direct method of identifying sites with elevated pressure driven emissions. However, this alternative would require more complex ISD algorithms that would likely require several more years for field studies and engineering time to develop appropriate performance standards for certification testing at multiple sites and, as described in Appendix L of the staff report, would result in a higher cost for certification and the software update. Also, Alternative 2 would have higher start-up costs for GDF owners and operators because of the higher cost of the updated ISD software and the cost to purchase and install a zero-leak pressure vacuum (P/V Zero) vent valve necessary to enable calculation of site-specific pressure driven emission rates. CARB rejected Alternative 2 for these reasons.

15.Comment: For example, what fugitive emissions rate is considered out of compliance, what average pressure level is considered problematic? Passive monitoring without associated specifications, milestones or threshold triggers is essentially worthless. [ARID December 2020 Letter]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. The following response provides responses to and clarification for ARID's question and comment.

In response to ARID's question, "...what fugitive emissions rate is considered out of compliance...?": CARB certification and test procedures establish standards and test methods to ensure that efficiency and emissions factors, including factors for pressure-related fugitive emissions, are met. Agency Response to Comment #23 later in this report provides additional information

about the certification process for assessing compliance with emission factor and efficiency certification performance standards. CARB uses these standards and procedures to assess compliance of Phase II vapor recovery systems for which manufacturers are seeking CARB certification for sale of their equipment in California. Pursuant to Health and Safety Code, certified systems are presumed in compliance, and therefore insulated from certain legal actions, if certified by CARB and thereafter operated in accordance with CARB's certification conditions and manufacturer's instructions. (see Health and Saf. Code § 41954 subd. (i).) Therefore, compliance with the fugitive emission performance standard is assessed only during the certification process, and not for CARB-certified equipment already installed and in use at individual retail and other GDFs.

In response to ARID's question, "...what average pressure level is considered problematic?": An average UST ullage pressure or pressure profile⁹ can be assessed in different ways depending on the needs of the assessment. When troubleshooting an ISD alarm at a GDF, a GDF operator or service contractor can compare the current average pressure or pressure profile to values in pressure reports generated for prior months to assess whether the profile has changed substantially. As part of local and statewide assessments, Air District and CARB staff can compare pressure profiles over time for many GDFs to assess trends. The CARB technical support document, "Evaluation to Identify Potential ISD Report Options for Characterizing UST Ullage Pressure Data,"¹⁰ provides examples of several types of pressure assessments, and pressure profiles for many GDFs, which can be useful for future assessments.

CARB staff disagrees with ARID's comment, "Passive monitoring without associated specifications, milestones or threshold triggers is essentially worthless." The new requirements for enhanced UST ullage pressure reports and expanded data storage would provide several benefits to GDF operators, service contractors, CARB, and Air Districts. Benefits include more effective troubleshooting to identify equipment problems and their causes, which ultimately would reduce costs for GDF operators, as well as improved

⁹ An example of a "pressure profile" is the new pressure report requirements included in CP-201 to calculate the percentage of UST ullage pressure data in different pressure ranges defined by these categories: UST ullage pressure \leq 0.00 iwc; 0.00 iwc < UST ullage pressure; 0.00 iwc < UST ullage pressure \leq 0.30 iwc; 0.30 iwc < UST ullage pressure \leq 1.30 iwc; 1.30 iwc < UST ullage pressure \leq 2.50 iwc; and UST ullage pressure > 2.50 iwc.

¹⁰ The findings of this technical support document were summarized in Chapter II of the staff report, and the document is included in its entirety in the rulemaking record:

CARB. 2020. Evaluation to Identify Potential ISD Report Options for Characterizing UST Ullage Pressure Data, Report Number VR-OP-G5. Overpressure Study Technical Support Document prepared by staff of the Vapor Recovery and Fuel Transfer Branch, MLD, CARB. August 1, 2020.

understanding of site-specific conditions and reduced time needed for site visits during future studies by CARB and Air Districts. In addition, the improved ISD pressure reports could be used as a screening tool to identify GDFs that may warrant further investigation. Examples of further investigation may include vapor recovery equipment troubleshooting and repair to establish baseline operating conditions and, if the overpressure conditions persist, the installation of continuous monitoring equipment to more accurately measure site-specific pressure driven emissions over a longer period. Chapters II and IV in the staff report provide more information about these and other rulemaking benefits.

16.Comment: In addition, expecting under staffed Agencies to physically visit thousands of fuel stations and manually download such data is unrealistic. The infrastructure for automatic and remote data acquisition is already in place at CA GDF, de-coupling this information backbone from raw data sources is extremely inefficient and essentially “turns off the lights” for illuminating important data and associated trends. The proposed amendments have the opposite effect of the stated desire to “make stored information more useful”. The stored pressure data interval will be rendered “useless” by ARB proposed amendments. [ARID December 2020 Letter]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. The following response provides clarification for ARID’s comment.

To clarify, current EVR Regulations do not require automatic and remote data acquisition, and the proposed rulemaking would not affect any data acquisition systems already in place at California GDFs. Under current regulatory conditions, Air District staff must visit sites and review ISD data and maintenance logs to enable the ISD systems to be the most effective tools possible for controlling excess emissions. Regardless of the rulemaking’s changes to the ISD assessments, the ISD data and maintenance log must be reviewed by District staff to ensure the GDF operator is properly responding to the information provided by the ISD system. Further, it is CARB staff’s experience that remote data acquisition is widely used by some big box retail hypermarkets that pay an additional ongoing fee for a necessary remote management service, but otherwise is not in widespread use. CARB disagrees with ARID’s comment, “The stored pressure data interval will be rendered “useless” by ARB proposed amendments.” Agency Response to Comment #15 provides a summary of the benefits of the new requirements for enhanced UST ullage pressure reports and expanded data storage.

Although remote data access sounds promising and is available in some instances, establishing it by regulation would take time to ensure that all issues including cost are carefully considered and is beyond this rulemaking. Some crucial issues to consider include protecting confidential and proprietary

information such as sales and throughputs data and ensuring that the information is not falsified or hacked. Additional studies would need to be undertaken to define the benefits and whether they outweigh the cost, especially to small business GDFs. Further, remote data access does not provide a solution to the problem of ineffective ISD overpressure alarms.

17.Comment: Section 5 states "Require vapor recovery equipment manufacturers to provide a physical sample of the certified system or components for CARB to archive." While this proposed amendment may apply to certain small and relatively inexpensive samples of equipment; for example, nozzle components or diaphragms, the need to supply larger and more expensive hardware samples seems cumbersome. [ARID December 2020 Letter]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. The following response provides clarification for ARID's comment.

CARB addressed this concern about larger and more expensive hardware samples in the text of the proposed amendment to CP-201, CP-206, and CP-207, as explained in the staff report in Chapter II (pages 25-26) and Chapter IX (pages 106-108). The proposed amendment intentionally does not require samples of all certified equipment, in order to avoid unnecessary materials costs for manufacturers and unnecessary storage costs for CARB. Instead, the proposed amendment applies only to "new systems or components certified or approved after January 1, 2022, ..." and does "not apply to renewal certifications for systems or components that have no change to designs or materials." In addition, the proposed amendment includes this text: "In lieu of submitting a complete system or component, in order to reduce costs to applicants where feasible, the Executive Officer may request the submission of only sub-parts or sub-assemblies that are crucial in controlling emissions." These qualifications were included specifically to reduce the cost and cumbersomeness of the proposed amendment to the extent feasible while still achieving the goal of the amendment.

18.Comment: For example, the rigorous Certification process requires detailed specifications on key system components; Staff at any time can physically inspect field installed gear to ensure conformance with previous specifications. [ARID December 2020 Letter]

Agency Response: This comment seems to suggest that CARB consider an alternative to the proposed amendments. The proposed amendment requires equipment manufacturers to provide a physical sample of the certified system or components for CARB to archive at the time of their first-time certifications and renewal certifications that may have design or material changes.

ARID's suggestion does not achieve the goal of the rulemaking because it would not archive a sample at the time of certification that can be compared to equipment manufactured at a later time to enable identification of undisclosed changes. As explained in Chapter 2 of the staff report (pages 25-26), without archived physical samples of components at the time of their certification, it has been difficult for CARB to enforce requirements, or hold manufacturers accountable, when undisclosed changes were made. Maintaining samples of certified equipment allows for later comparison to systems or components that may be experiencing problems or complaints from end-users in the field (GDF owners and operators). If issues or questions arise in the future, the archived physical samples can be examined. For these reasons, ARID's suggestion is not a reasonable alternative to the rulemaking.

19.Comment: Also, if ARB expects suppliers to provide useable expensive hardware, is ARB willing to pay list price for such gear? There is a real cost to suppliers for shipping gear and allowing a regulatory agency to archive the gear for an indefinite period of time. [ARID December 2020 Letter]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. The following response provides clarification for and response to ARID's question.

In response to ARID's question, the cost analysis for the proposed amendment assumes CARB would not pay manufacturers for the cost of the equipment to archive. This cost would be the responsibility of the manufacturer seeking certification. CARB has legal authority to charge fees to recover the costs of certification and providing samples is part of the certification process. However, the cost analysis assumes CARB would pay for the long-term warehouse storage costs. Chapter VIII and Appendix L (pages L-82 through L-88) of the staff report provide a detailed evaluation of the potential costs for manufacturers and CARB associated with the proposed amendment. Agency Response to Comment #17 provides a summary of the ways the proposed amendment was designed to minimize costs for manufacturers to the extent feasible while still achieving the goal of the rulemaking.

20.Comment: Summary - ARID does not wish to be confrontational with ARB; however, we feel the need to objectively state our views based on practical experience earned through decades of involvement in this field. We feel the risks of "shunning political correctness" are overshadowed by the need to inform both the Board and California residents on the significant shortcomings of the present ARB proposal along with illumination of what appears to be a "broken regulatory system" within the fuel marketing segment in California, and indeed throughout the entire United States.

We think that science and engineering should lead the process for optimizing emissions reductions with associated economic benefit. We also think that fuel marketers should be given options for choosing the most cost-effective means to comply with logical regulations, considering site specific factors for individual marketers. [ARID December 2020 Letter]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. The following response provides clarifications for ARID’s comment.

First, CARB developed the proposed rulemaking using a comprehensive, data-driven approach. Agency Responses to Comments #2 through #5 provide summaries of the CARB studies’ approach and findings, and of the rationale for the rulemaking scope. Also, as indicated in prior Agency Responses, the other rulemaking amendments not mentioned in ARID’s comments—establishment of a more stringent nozzle spillage standard and other amendments to clarify and improve the certification and test procedures for better regulatory certainty and enforceability—all help optimize emission reductions with minimal economic impacts. Chapter IV in the staff report provides a complete description of the rulemaking benefits.

Second, fuel marketers will continue to have options for choosing the most cost-effective means to comply with EVR regulations, considering site-specific factors for individual marketers. For example, the proposed amendments provide flexibility for existing GDFs by making the installation of updated ISD software voluntary so that GDF owners and operators would be allowed to choose whether to install the updated ISD software based on their site-specific assessments of potential cost savings and business priorities. If, based on their site-specific assessments, owners find that installation of one of the CARB-certified high capacity vapor processors (which include ARID’s Permeator™ system) would be more beneficial than installation of an ISD software update, the amendments would allow them to do so. Staff report Appendix C (CP-201 section 2.4.9, page 6) provides the specific regulatory amendment that provides this flexibility, and staff report Chapter II (pages 17-18), Chapter III (pages 40-41), and Chapter IV (page 67) provide additional discussion about this specific amendment.

21. Comment: Given the transition to the Biden Administration, with robust rulemaking, the power and creativity of inventors and entrepreneurs can be unleashed to further innovate and provide elegant solutions to a wide array of current and future energy and environmental challenges. We will submit for the record along with this letter our previous comments to MLD Staff. Originally, Staff promised to provide ARID with an opportunity for follow-on discussion to our previous submittal, but as of this writing, we have not received any feedback on

the material we submitted on 29 April and 14 May 2020. [ARID December 2020 Letter]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. The following response provides clarification for ARID's comment.

CARB staff carefully considered Mr. Tiberi's comments and materials from submittals and meetings in April and May 2020 and earlier meetings, which were based on California hypermarket stations and gas stations outside of California, during development of the proposed rulemaking. CARB staff had several meetings and email exchanges with Mr. Tiberi in the weeks leading up to the public workshop in May 2020, and did not have any follow-up questions or additional feedback about the materials he sent, so did not initiate an additional follow-up meeting. However, CARB staff have been available to Mr. Tiberi and all other stakeholders who request meetings to resolve their questions.

The alternatives described in ARID's April and May 2020 submissions were considered during the preliminary, informal stage of this rulemaking project and are not pertinent to the current rulemaking. CARB considered a variety of rulemaking project scope options during the informal stage of this rulemaking project, including options very similar to ARID's suggestions noted in the above comments. Several rulemaking project scope options were discussed in public workshops held in 2017 and 2018. The current rulemaking scope is based on Air District and public input and conclusions from field studies. CARB discussed the rationale for the current rulemaking scope in the public workshop held on May 5, 2020, as well as in earlier stakeholder meetings (including ARID) in spring 2020. Chapter XI of the staff report provides a description of the public workshops and other public outreach efforts prior to this rulemaking. Additionally, further public outreach efforts included notifying stakeholders (including ARID) by email when preliminary draft versions of the proposed regulatory amendments and draft technical support documents were available for informal public review on the CARB website. Agency Response to Comment #2 provides a summary of the rationale for the scope of this rulemaking.

B. Comments Received during the December 2020 Board Hearing¹¹

(1) *Bill Magavern, CCA (oral comments):*

22.Comment: And first I want to say to Chair Nichols, to Board Members Gioia, Mitchell and Sheriffs and to Kurt Karperos, I have truly enjoyed working with all of you. And on behalf of the Coalition for Clean Air really appreciate everything you've done to improve the air quality in California.

So for the Enhanced Vapor Recovery Regulation, this is Bill Magavern with Coalition for Clean Air. And we support these proposed amendments. The tightening of the nozzles spillage standard will prevent backsliding, and removing the ineffective overpressure alarm, I think will be good for safety, because when you have an alarm that goes off unnecessarily, you get a syndrome where people start to ignore alarms, like the old story of the boy who cried wolf, and then when you need people to pay attention to an alarm, they're less likely to do so.

And overall, I just wanted to note that, as Chair Nichols said at the outset, this Enhanced Vapor Recovery Regulation continues to be important to reducing emissions in the state. So with these improvements, I think it's in good shape to continue to serve us. And as long as we have gas stations, we need to continue to have these rules in place. Thank you very much. [CCA]

Agency Response: CARB made no changes based on the received comments. CARB appreciates the support of the CCA.

(2) *Tedmund Tiberi, ARID (oral comments and slides):*

23.Comment: So I was hoping to – I wanted to review the storage tank evaporative loss dynamics and those slides go very quickly. And I wanted to talk about -- oh, I'm sorry, if you could go back, please. I wanted to talk about section 4.1 of CP-201 in terms of the emission factor and fugitive value being less than 50 percent for approving these systems. I'd also like to say I'm a bit intimidated to present to the Board after 27 years. I'm not a lobbyist or an attorney. I'm a chemical engineer from a small town in Wheaton, Illinois here outside of Chicago. Then I want to also tie in once we have these emission factors established, I want to use TP-201.2F, which is the CARB's Section 9 to calculate these emission factors, and then further to use the emission factor with the throughput of the site to show the actual emissions. Next slide, please. [ARID Oral Comments]

¹¹ Oral comments made during the hearing were transcribed by a certified shorthand reporter and verified using a recording of the hearing. The final transcript is included in the rulemaking record.

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. The following response provides clarification for ARID's comment and context for later ARID comments and agency responses.

To clarify, Mr. Tiberi is referring to the method used by CARB during certification testing of a specific Phase II vapor recovery system to determine the hydrocarbon emission factor and/or efficiency of the system and whether the system complies with the emission factor and efficiency certification performance standards. Compliance with the standards is demonstrated when the system-specific efficiency and emission factor is calculated for a test population consisting of 100 vehicles that do not have onboard refueling vapor recovery (ORVR) systems. The certification standards and test procedures, including the procedure for selection of a vehicle test population, are defined in four documents incorporated by reference in the EVR regulations:

- CARB Vapor Recovery Certification Procedure CP-201 section 4.1: Phase II Emission Factor/Efficiency
- CARB Vapor Recovery Test Procedure TP-201.2: Efficiency and Emission Factor for Phase II Systems
- CARB Vapor Recovery Test Procedure TP-201.2A: Determination of Vehicle Matrix for Phase II Systems
- CARB Vapor Recovery Test Procedure TP-201.2F: Pressure Related Fugitive Emissions

These certification standards and test procedures are used to assess compliance of Phase II vapor recovery systems for which manufacturers are seeking CARB certification for sale of their equipment in California. As described further in Agency Response to Comment #15, compliance is assessed only during the certification process, and not for CARB-certified equipment already installed and in use at individual retail and other GDFs.

24.Comment: And based on the capital and operating expense of the control options, we think that there can be a tiered approach. I know John said that we submitted a letter to require installation. Of course, we don't expect a monopoly of our system to all GDF in California. In fact, quite the opposite. We think there's a tiered approach that's possible balancing risk and inviting other competitors of which there are several that have systems in the pipeline right now. Then also, we want to take into account benzene concentration levels, and with guidance from the scoping plan, allow the Board to consider designated levels for the air quality standards and the risks. And in fact, in the previous comments that we have supplied, we have presented tiered approaches in terms of GDF1 through 5, which is a typical notation that ARB has used for different throughputs. And next slide, please. Next slide. [ARID Oral Comments]

Agency Response: This comment suggests that CARB consider an alternative rulemaking project that would enact a “tiered approach” for GDFs with “different throughputs” that “take into account benzene concentration levels” with “designated levels for the air quality standards and the risks.” The comment indicates this suggested alternative rulemaking project would have CARB adopt a more stringent performance standard that would entail installation of HCVPs manufactured by ARID and other manufactures for a subset of GDFs, rather than for all GDFs throughout California, to require additional reductions of pressure driven emissions from the GDFs.

CARB carefully considered ARID’s comment made during the Board hearing, and previous materials supplied by ARID in Mr. Tiberi’s December 2020 comment letter, which presented additional information about the tiered approach in terms of GDF1 through 5 throughput levels. CARB determined that ARID’s suggested alternative rulemaking project goes beyond the scope of this rulemaking and does not provide a viable alternative for the rulemaking because it does not achieve a primary goal of this rulemaking project.

The scope of the current rulemaking is to eliminate ineffective ISD overpressure alarms in order to improve the cost-effectiveness of the EVR regulations without affecting their emission reduction benefits. The proposed amendments would be implemented with an ISD system software upgrade; no new hardware would be needed. In contrast, ARID suggests that CARB require installation of HCVPs for approximately 8,000 GDFs (those GDFs with or without ISD that have average monthly gasoline throughput of 75,000 gallons or higher¹²). ARID’s suggested alternative rulemaking project would create a new and substantial cost burden for existing GDFs for the purpose of further reducing their emissions, by requiring the replacement of existing pressure management systems with an HCVP that would cost individual operators from \$32,000 to \$101,000 per GDF. Agency Responses to Comments #5 and #7 provide additional review of upfront costs and ongoing savings under the proposed rulemaking, compared to the costs of HCVP installation and maintenance. Note, the proposed rulemaking does not affect Air Districts’ authority to require changes during the permit renewal process, including more stringent throughput limits and stricter performance standards (e.g., provided by Health and Safety Code § 41954(g) and (h)).

CARB considered a variety of rulemaking project scope options during the preliminary, informal stage of this rulemaking project, including options very

¹² ARID suggests 8,120 GDFs of the 10,000 GDFs throughout California be required to install HCVPs based on their average monthly throughput in the Microsoft Excel file, “Vent and Fugitive vs Refueling Emissions with ORVR detail on Phase II with HC Conc 13 May 2020.xlsx,” attached to Mr. Tiberi’s December 2020 comment letter.

similar to ARID’s suggested alternative rulemaking project, that would have required additional reductions of pressure driven emissions. Such an alternative rulemaking project scope was not pursued for two key reasons. First, CARB studies determined that pressure driven emissions are not significant on a regional or statewide basis, and are expected to decrease substantially as a result of CARB’s 2018 rulemaking and other factors. Second, long-term study site data indicate pressure driven emission rates vary from GDF to GDF, irrespective of throughput, and the sites with the highest pressure driven emission rates do not necessarily exhibit the highest total emission rates (CARB, 2020¹³). It is the site-specific total emission rate that is relevant for determining the near-source air quality impact of a specific GDF. Under a tiered approach based on throughput, many GDFs that have minimal or negligible pressure driven emission rates could be required to install HCVPs, which would result in substantial cost burden with minimal reduction in their total emission rates. Agency Response to Comment #2 further describes the rationale for the scope of this rulemaking.

Finally, the other rulemaking amendments not mentioned in ARID’s oral comments—establishment of a more stringent nozzle spillage standard and other amendments to clarify and improve the certification and test procedures for better regulatory certainty and enforceability—all help minimize localized adverse public health impacts. Chapter IV in the staff report describes all the rulemaking benefits.

25.Comment: This shows an uncontrolled system where you have a storage tank, fuel in the bottom and vapors above. The motorist pulls nozzle -- pulls the trigger of the nozzle, vapors are pumped from the tank to the vehicle. Next slide. The liquid level goes down, liquid in the storage tank, and the vehicle tank level goes up. Next slide. Vapors are then displaced from the vehicle tank. And this is pre-stage two. So this is a vehicle refueling emission. And as you see on the right side, as fuel is being pumped out of the tank air is being ingested. So atmospheric air is being drawn into the tank..." [ARID Oral Comments]

Agency Response: This comment does not request a change to the proposed amendments. CARB made no changes based on the comment. At this time in his oral comments, Mr. Tiberi was informed by Board Clerk Sakazaki that his allotted three minutes for comments had concluded and Chair Nichols declined a request to grant additional time for comment. Board Clerk Sakazaki stated

¹³ The following technical support document, which is already in the rulemaking record, provides a detailed description of CARB staff’s evaluation of the significance of GDF pressure driven emissions:

CARB. 2020. Evaluation of Pressure Driven Emissions from Gasoline Dispensing Facilities, Report Number VR-OP-G4. Overpressure Study Technical Support Document prepared by staff of the Vapor Recovery and Fuel Transfer Branch, MLD, CARB. August 1, 2020.

that Mr. Tiberi's PowerPoint slides file had been submitted to CARB's online [Board Meeting Comments Log](#) so it is available for consideration by the CARB Board Members and staff.

Attachment A of this FSOR includes images of all of Mr. Tiberi's slides. The slides file did not include speaking notes. CARB added a box with number in the upper left corner of each image to note the slide number for ease of review. In the following Comments #26 through #31, CARB provides a brief summary of the slides' content. CARB carefully reviewed the slides to determine if any present an objection or recommendation specifically directed at the regulation and included those as written verbatim in the slides in the following summary, together with an agency response. The originally-submitted Microsoft PowerPoint file is included in its entirety in the rulemaking record and is available via email upon request and via the [Board Meeting Comments Log](#).

26.Comment: ARID's slides 1 and 2 provide Mr. Tiberi's title, contact information, and presentation outline. Slide 3 provides a list of bulleted points. The following bulleted text provides the slide points verbatim in their entirety, lettered here for ease of review:

- a. Based on capital and operating expense of control options, tabulate a cost effectiveness in \$/lb or \$/ton of VOC emissions reduced
- b. With use of a benzene concentration level, based on a relevant observed hydrocarbon concentration of emitted vapors, tabulate a benzene emission factor
- c. With guidance from "Scoping Plan", consider designated levels for attaining and maintaining ambient air quality standards and acceptable risk levels for toxic exposure
- d. Apply emission thresholds and cost effectiveness to range of GDF; for example GDF 1, 2, 3, 4, 5; with average throughput of 25 k gal, 37.5, 75, 150, and 300 k gal/month

Agency Response: ARID's slide 3 apparently requests CARB to conduct additional cost analysis and to consider alternatives to the proposed rulemaking.

Bullet point (a) does not request a change to the proposed amendments and instead appears to present a recommendation already presented in ARID's December 2020 comment letter, described earlier in this chapter. The Agency Response to Comment #7 provides an explanation for why evaluating the cost effectiveness of emission control options in terms of dollar per pound or per ton of reduced emissions is not relevant for the proposed rulemaking for ISD overpressure alarms because its goal is to improve cost-effectiveness without affecting emissions reduction.

Bullet points (b) through (d) appear to suggest an alternative rulemaking project that would have CARB adopt new and more stringent performance standard(s) defined as benzene emission factor thresholds (limits) that would apply to different categories of GDFs based on their gasoline throughput, designed to require additional emission reductions from the GDFs. These bullet points correspond to Mr. Tiberi's oral comments transcribed earlier in this chapter. The Agency Response to Comment #24 provides an explanation for why this suggested alternative rulemaking project goes beyond the scope of this rulemaking and does not provide a viable alternative for the rulemaking.

27. Comment: ARID's slides 4 through 25 provide graphics with animations that illustrate the type of emissions that can occur at GDFs with and without vapor recovery controls when vehicles with and without ORVR systems are fueled.

Agency Response: None of these slides contain text that requests a change to the proposed amendments. CARB made no changes based on the material presented in these slides. The following response provides clarification for some of the material illustrated in ARID's slides.

In slide 12, ARID uses the phrase "Stage II", which is used in federal requirements. To clarify, CARB notes that the California Vapor Recovery Program instead uses the term "Phase II" to describe EVR regulations to reduce gasoline vapor emissions during storage and transfer of gasoline from a GDF storage tank to a vehicle.

In slides 20 through 25, ARID's graphics depict Mr. Tiberi's understanding of the types of emissions that can occur at GDFs during and after vehicles with ORVR systems are fueled. To provide context, CARB notes that in 2000 and 2007, CARB enacted the EVR regulations for GDFs with USTs and ASTs, respectively, to include new requirements for improved compatibility with vehicles that have ORVR systems and for other more stringent controls for Phase II systems to achieve additional emission reductions. In addition, CARB's 2018 rulemaking addressed the fundamental design problem with the fill pipe designs of some newer vehicles (which have ORVR systems) that are less compatible with vapor recovery nozzles, which caused an increase in overpressure conditions and associated emissions. Chapter II of the staff report provides additional background information about the EVR regulations and emission controls that can help provide some context for ARID's slides.

28. Comment: ARID's slides 26 through 47 provide graphics and animations that illustrate ARID's Permeator™ high-capacity vapor processor system. The slides also present graphs of UST ullage pressure data recorded at a GDF in Georgia that does not have Phase II vapor recovery controls but has the ARID Permeator™ installed, and at two GDFs in California along with images of spreadsheets that show ARID's calculations of emission factors while a Phase II Healy system with

clean air separator (Healy CAS) was installed versus when an ARID Permeator™ was installed at one of the GDFs. Slide 34 indicates the potential for ground water contamination. Slides 44 and 47 compare ARID's calculation of emission factors for the Healy CAS and ARID Permeator™ systems to the emission factor and efficiency certification performance standards contained in CARB's certification procedure CP-201 section 4.1, "Phase II Emission Factor/Efficiency."

Agency Response: None of these slides contain text that requests a change to the proposed amendments. CARB made no changes based on the material presented in these slides. The following response provides context for some of the material illustrated in ARID's slides.

The Agency Response to Comment #23 provides some background information about the method used by CARB during certification testing of a specific Phase II vapor recovery system to determine the hydrocarbon emission factor and/or efficiency of the system and whether the system complies with the emission factor and efficiency certification performance standards. Compliance with the certification performance standards is assessed only during the certification process, and not for CARB-certified equipment already installed and in use at individual retail and other GDFs. The information in Agency Responses to Comments #15 and 23 may help provide some context for ARID's slide material. However, without any ARID speaking notes for the slides, CARB cannot provide any clarifying response.

Note, one of the California GDFs identified in ARID's slides was included as a study site in CARB's field assessments while it had the Healy CAS installed, and CARB data collected at the site are included in CARB's estimates of regional and statewide GDF emission estimates described in the technical support documents included in the record for this rulemaking. A direct comparison of CARB and ARID estimates cannot be made without additional information, such as an explanation of the assumptions used and whether CARB's test procedure TP-201.3 for leak decay testing was conducted before and after pressure data collection to validate the pressure results. Nonetheless, ARID's estimate is substantially higher than CARB's estimate. The magnitude of pressure driven emissions reported by Mr. Tiberi on slide 44 is 0.31 lbs/1,000 gallons dispensed. This is not consistent with CARB staff findings at the same site (designated as "Site A" in technical support document VR-OP-A6) that was continuously monitored by CARB staff from the winter of 2009 through the summer of 2013. As indicated in the technical support document, CARB staff measured a pressure driven emission rate of 0.09 lbs/1,000 gallons dispensed in the winter and 0.03 lbs/1,000 gallons dispensed in the summer. Additional note: As described further in Agency Response to Comment #15, compliance with certification performance standards is assessed only during the certification process, and not for CARB-certified equipment already installed and in use at individual retail and other GDFs .

CARB certified the ARID Permeator™ system in November 2019, after CARB study field data collection efforts were completed, so none of the CARB study sites had the Permeator™ system installed. In addition, CARB did not include data from GDFs outside of California. Agency Response to Comment #2 further describes CARB study design and results, and how they support the rationale for the scope of this rulemaking.

Regarding ARID's slide 34 and the potential for groundwater contamination: As part of the certification process, a determination by the Water Board is required before CARB can certify a system. Thus, any groundwater impact must be corrected to the satisfaction of the Water Board.

29.Comment: ARID's slide 48 contains an image of a portion of the title page of the CAPCOA Air Toxics "Hot Spots" Program's Gasoline Service Station Industrywide Risk Assessment Guidelines. Slide 49 contains an image of a portion of a page from the Guidelines document that shows assumptions for gasoline content with the "Weight % In Liquid" and "Weight % In Vapor" values for benzene highlighted. Slide 49 also includes a text box below the image with the question, "Are benzene weight % values accurate considering Elevated <sic> vapor concentration of hydrocarbon emissions?"

Agency Response: None of these slides contain text that requests a change to the proposed amendments. CARB made no changes based on the material presented in these slides. The benzene weight percentage values and ARID's question about the values are not relevant for this rulemaking because the EVR regulations do not include any performance standards for benzene emissions, and CARB emission estimates described in the technical support documents included in the rulemaking record are for ROG emissions. Agency Response to Comment #2 describes the CARB analyses' scope and how they support the rationale for the scope of this rulemaking.

30.Comment: ARID's slide 50 provides a list of bulleted points. The following bulleted text provides the slide points verbatim in their entirety, lettered here for ease of review:

- a. Fugitive Emission Factor (lb/1,000 gal), E
- b. $E \times \text{GDF Throughput/month} = \text{lb/month}$
- c. Threshold and Cost Effectiveness Determined by ARB
 - i. **Monthly VOC Emission Limit**
 - ii. **Monthly Benzene Emission Limit**
 - iii. **Costs per Ton of VOC reduced**
- d. ARB can develop requirements to GDF based on throughput range

- e. For example GDF1, GDF2, GDF3, GDF4, GDF5 for throughputs of 25 k gal, 37.5 , 75, 150, and 300 k gal

Agency Response: ARID's slide 50 appears to suggest an alternative rulemaking project that would have CARB adopt new and more stringent performance standards defined as monthly VOC and benzene monthly emission limits that would apply to different categories of GDFs based on their gasoline throughput, designed to require additional emission reductions from the GDFs. These bullet points appear to correspond to Mr. Tiberi's oral comments transcribed earlier in this chapter. The Agency Response to Comment #24 provides an explanation for why this suggested alternative rulemaking project goes beyond the scope of this rulemaking and does not provide a viable alternative for the rulemaking.

31. Comment: ARID's slides 51 and 52 provide lists of bulleted points. The following bulleted text provides the slide points verbatim in their entirety. The points for slide 51 are lettered here for ease of review.

Slide 51 "IT Backbone/Infrastructure":

- a. Internet enabled ISD systems provided by Veeder-Root and Franklin Fueling Systems are presently in widespread use throughout CA
- b. ISD raw data acquisition in place as percentile metrics are presently calculated daily
- c. The percentile calculations can be augmented or replaced by the pressure interval calculations
- d. The Pressure Interval metrics are subsequently used to calculate fugitive emission factors
- e. The fugitive emission factors are then used to tabulate absolute, site specific emissions levels which are the product of (Emission Factor) x Throughput

Slide 52 "Modification of ISD to include fugitive and vent emission rates":

- a. Seems like an incremental investment to include simple programming within the ISD systems provided by Veeder-Root and Franklin Fueling Systems
- b. Pressure data is important, but at present, these metrics are "stand-alone"
- c. Key is to use existing pressure data to calculate emission rates, both fugitive and vent
- d. The emission rates are then combined with site throughput to yield meaningful and useful metrics for ARB to use in their focused rulemaking

Agency Response: Slide 51 bullet point (a) does not request a change to the proposed amendments. It appears to reflect a comment in ARID's December 2020 letter. Agency Response to Comment #16 provides a clarification response that explains current EVR regulations do not require automatic and remote data acquisition, and the proposed rulemaking would not affect any data acquisition systems already in place at California GDFs. CARB made no changes based on the comment.

Slide 51 bullet points (b) and (c) appear to refer to the pressure interval calculations included in the proposed amendments and do not request a change to the proposed amendments. CARB made no changes based on the comment.

Slide 51 bullet points (d) and (e) suggest an alternative to the proposed amendments to instead require calculation of site-specific emission factors and emission levels for each GDF. Slide 52 bullet points (a) through (d) provide supporting rationale for the suggested alternative. These bullet points appear to reflect a comment in ARID's December 2020 letter. CARB agrees that generation of site-specific emission factors and levels could be useful and considered an alternative that would require changes to ISD software to require generation of ISD reports with site-specific emission rates as Alternative 2 in the staff report (Chapter IX section A). However, this alternative would require more than just an "incremental investment" to implement. Agency Response to Comment #14 summarizes the reasons CARB rejected this alternative and the staff report provides additional explanation.

(3) William Barrett, ALA (oral comments)

32.Comment: Will Barrett with the American Lung Association. And I wanted to offer my support for the proposal. This program supports reductions in ozone and toxic emissions. And the amendments really represent what we've come to expect from CARB regulations in terms of your long-term commitment, making course corrections, following the best available data, and then making smart programmatic adjustments as you go.

The -- to that end, the staff laid out a common sense approach to the nozzle spillage requirements to protect against backsliding, improving cost effectiveness, and really securing the basic structure of this program to reduce harm to neighboring residents. Keeping the station-based controls in addition to the onboard systems ensures an important layer of protection and we're encouraged to see that remaining in place. And ultimately, we do urge the Board to adopt the proposal and appreciate the focus on bringing the standards up to the technology, again to prevent backsliding and maintaining the focus on preserving the program benefits.

So, in closing, I also wanted to take a moment to just say thank you to Chair Nichols, Ms. Mitchell, Supervisor Gioia, Dr. Sherriffs and Kurt Karperos. It's been a pleasure working with all of you through my role at the Lung Association. Your leadership and work will certainly continue to protect lung health long after you sign out of today's meeting. It's greatly appreciate -- appreciated by the American Lung Association. And personally, as parent, I greatly appreciate the work that you've done on behalf of all the breathers in California. Thank you very much. [ALA]

Agency Response: CARB made no changes based on the received comments. CARB appreciates the support of the ALA.

(4) Beverly DesChaux, EAE (oral comments):

33.Comment: Hi. Thank you. Beverly DesChaux, President of the Electric Auto Association, Central Coast, California. So really the solution is to go electric, because these little incremental steps are at the expense of human life, of human health, and quality of life. To be continuing to coddle that industry which has no regard whatsoever for human life is to continue to have human suffering. And we have solutions that are much more rapid than these little incremental, let's reduce a little bit that's going in, let's reduce a little bit that's going into the air. No, we need to accelerate the transition to electrification. And I know that you're working on it, but I think we need to speed it up. Thank you. [EAE]

Agency Response: This comment suggests that CARB consider an alternative rulemaking project to accelerate transition to electrification (of vehicles), in lieu of the proposed rulemaking for amendments to the EVR regulations for gasoline dispensing facilities. Such a project would require amendments to vehicle regulations rather than amendments to regulations for vapor recovery equipment used at California's GDFs, and therefore would not achieve the goals of this rulemaking project: improve cost effectiveness, preserve the currently level of air quality benefits, and clarify and improve the certification and test procedures for better regulatory certainty and enforceability of the EVR regulations. For these reasons, the suggested alternative is beyond the scope of this rulemaking and is not a reasonable alternatives to the rulemaking.

(5) Tung Le, CAPCOA (written comments):

34.Comment: On behalf of CAPCOA, I submit comments in support of staff's proposed amendments to certification and test procedures for vapor recovery systems at gasoline dispensing facilities. Emissions from refueling operations and similar sources can have significant health impacts on the people who live and work near these types of facilities; we thank you for working closely with the air districts to develop these amendments as they will support our mutual goals of cleaner air and protecting the health of Californians. This is especially important at the local level and in disadvantaged communities. We look forward to continuing to work

with CARB on programs that protect our environment and public health.
[CAPCOA]

Agency Response: CARB made no changes based on the received comments. CARB appreciates the support of CAPCOA.

V. Peer Review

Health and Safety Code section 57004 sets forth requirements for peer review of identified portions of rulemakings proposed by entities within the California Environmental Protection Agency, including CARB. Specifically, the scientific basis or scientific portion of a proposed rule may be subject to this peer review process.

CARB determined that this rulemaking does not contain a scientific basis or scientific portion subject to peer review, and thus no peer review as set forth in Health and Safety Code section 57004 was or needed to be performed.

The regulation at issue refines parts of the EVR regulations to improve cost effectiveness, preserve the currently level of air quality benefits, and clarify and improve the certification and test procedures for better regulatory certainty and enforceability. The rulemaking does not establish “a regulatory level, standard, or other requirement for the protection of public health or the environment,” such as an ambient air quality standard or toxic exposure level. As such, it does not have a “scientific basis” or “scientific portions” that form the foundations of a regulatory standard or level.

The technical studies and assessments used to analyze the potential environmental impacts of the regulation, such as the finding that removing the ineffective ISD overpressure alarm criteria from certification procedure CP-201 would improve cost-effectiveness without impacting current EVR emission reduction benefits, were developed previously and subject to public review.

**Attachment A:
Comment Slides Submitted during the Board Hearing**

This attachment provides images of the presentation slides submitted by Tedmund Tiberi (ARID Technologies, Inc.) to accompany his oral comments during the December 2020 Board Hearing. The originally-submitted Microsoft PowerPoint file is included in its entirety in the rulemaking record and is available upon request. No talking points or other written comments were included in the file.

1

Enhanced Stage II Vapor Recovery and Storage Tank Evaporative Emissions

Ted Tiberi
ARID Technologies, Inc.
www.ARIDtech.com
630.681.8500
ttiberi@ARIDtech.com

2

Outline

- Review of Storage Tank Evaporative Loss Dynamics
- Section 4.1 of CP-201
 - Emission Factor ≤ 0.38 lb/1,000 gal
 - Fugitive Emissions $\leq 50\%$ of this value, or 0.19 lb/1,000 gal
- Section 4.6 of CP-201
 - Daily Avg ≤ 0.25 iwc
 - Daily High ≤ 1.50 iwc
- TP-201.2 F, Section 9, Table 9.1
 - Use this format to tabulate fugitive emission factor
 - Combine the fugitive emission factor with site throughput to calculate mass emissions

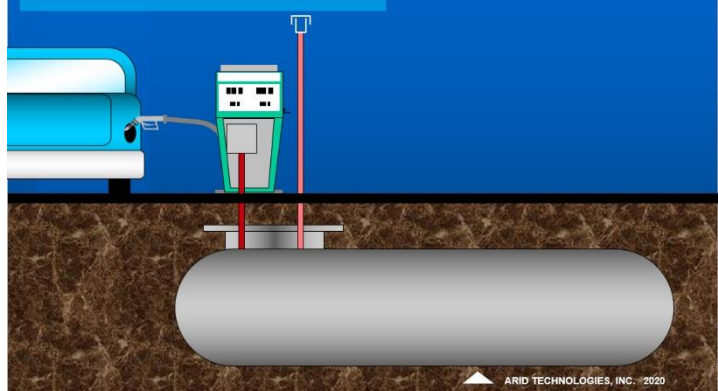
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Outline (cont'd.)

- Based on capital and operating expense of control options, tabulate a cost effectiveness in \$/lb or \$/ton of VOC emissions reduced
- With use of a benzene concentration level, based on a relevant observed hydrocarbon concentration of emitted vapors, tabulate a benzene emission factor
- With guidance from "Scoping Plan", consider designated levels for attaining and maintaining ambient air quality standards and acceptable risk levels for toxic exposure
- Apply emission thresholds and cost effectiveness to range of GDF; for example GDF 1, 2, 3, 4, 5; with average throughput of 25 k gal, 37.5, 75, 150, and 300 k gal/month

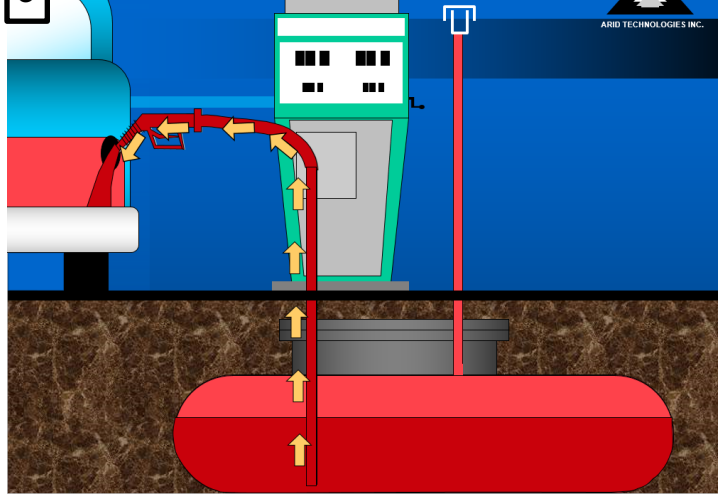
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The Uncontrolled System



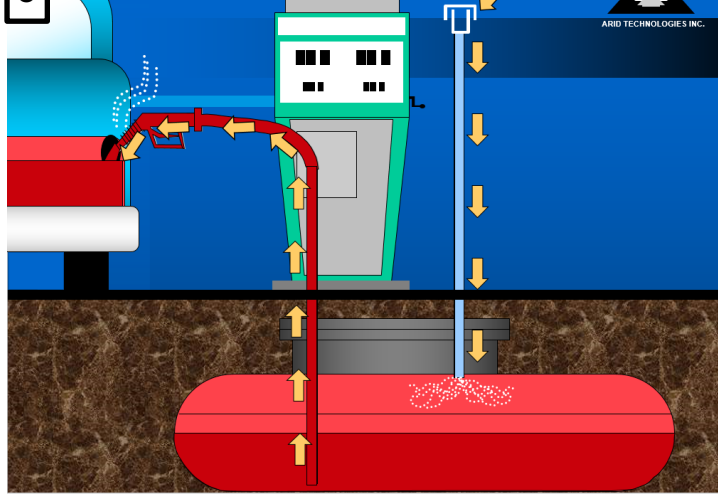
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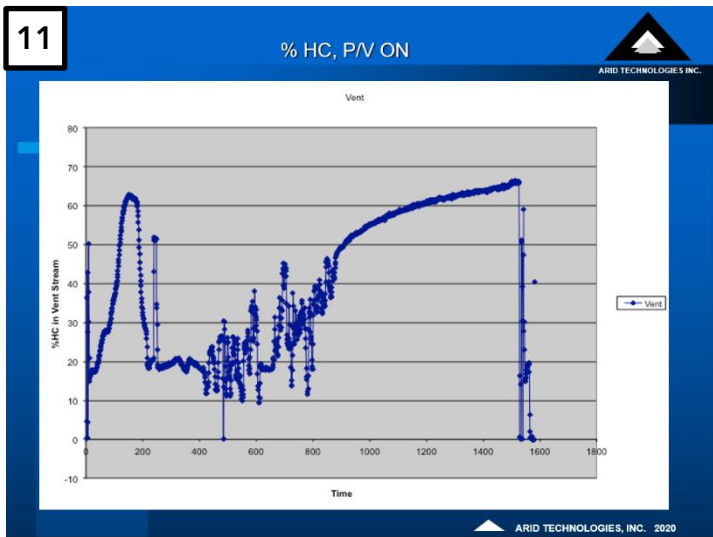
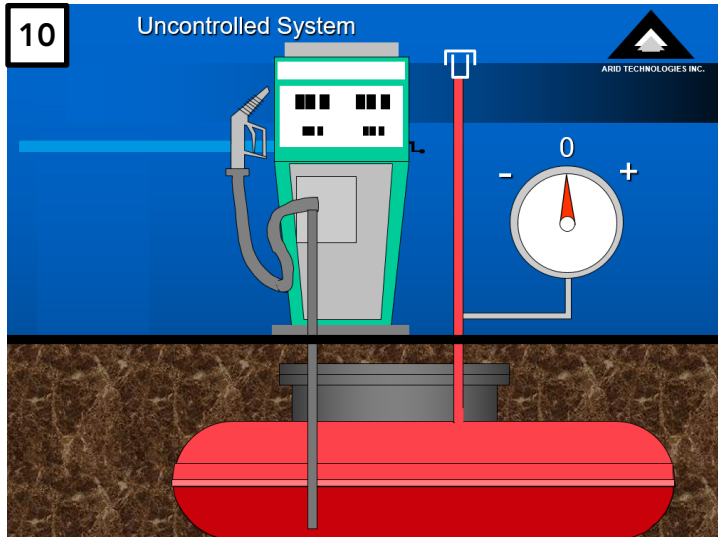
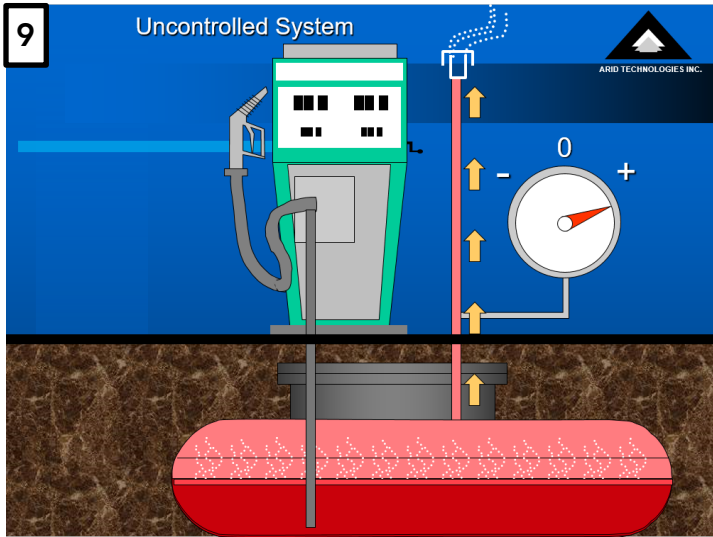
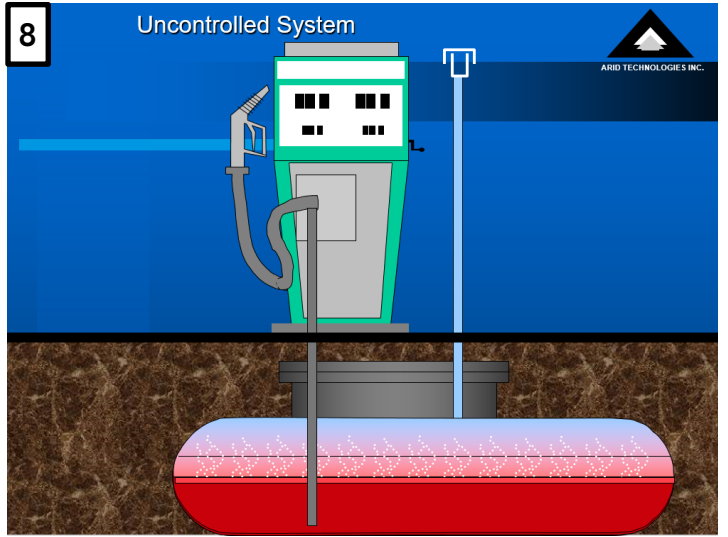
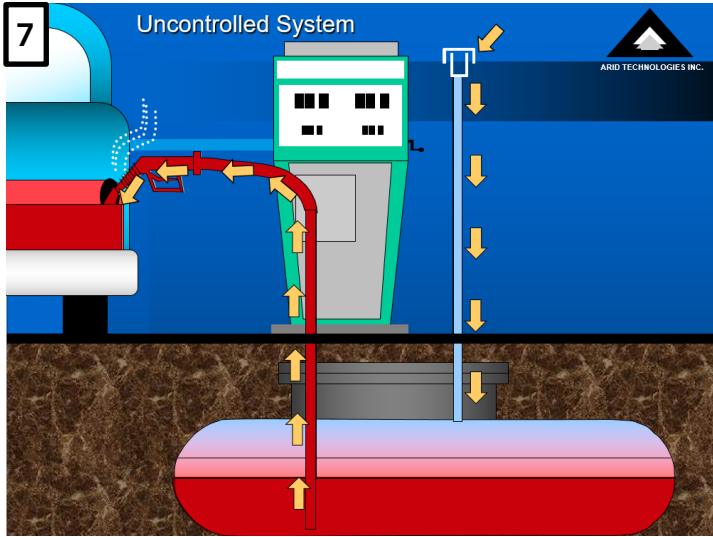
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Uncontrolled System



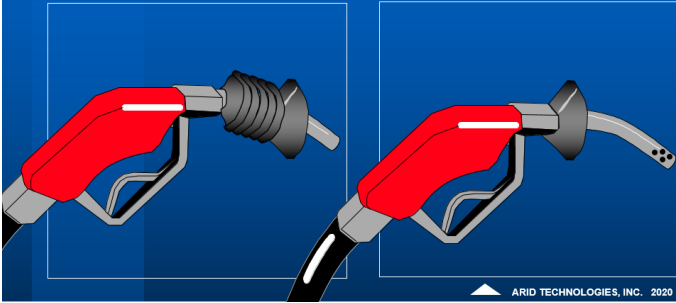


13

Stage II Recovery Systems

Balanced System

Vacuum-Assisted System

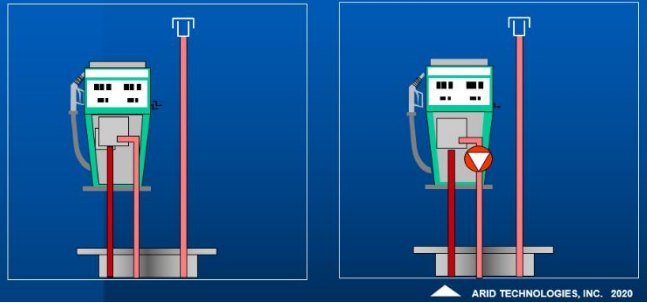


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Stage II Recovery Systems

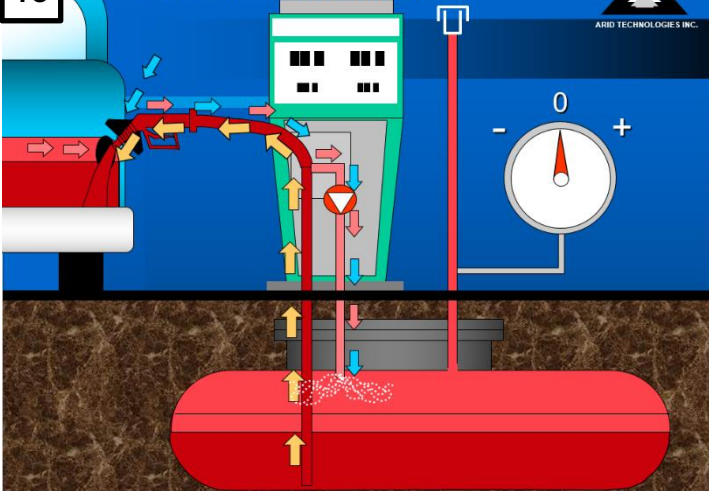
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Vacuum-Assisted System



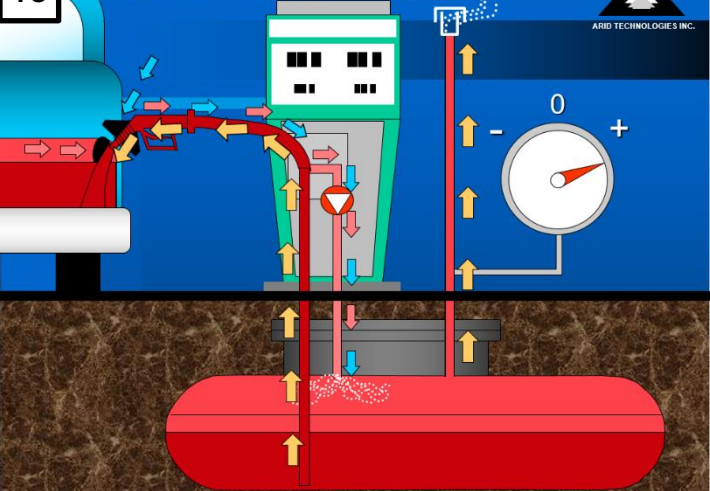
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Vacuum-Assisted Recovery Systems



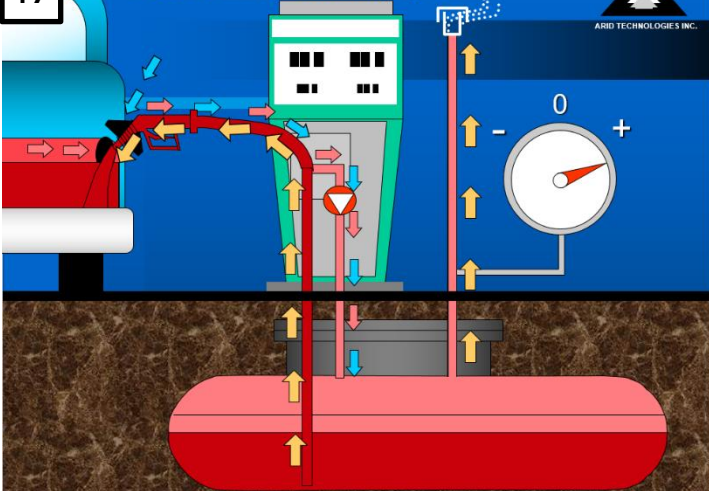
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Vacuum-Assisted Recovery Systems



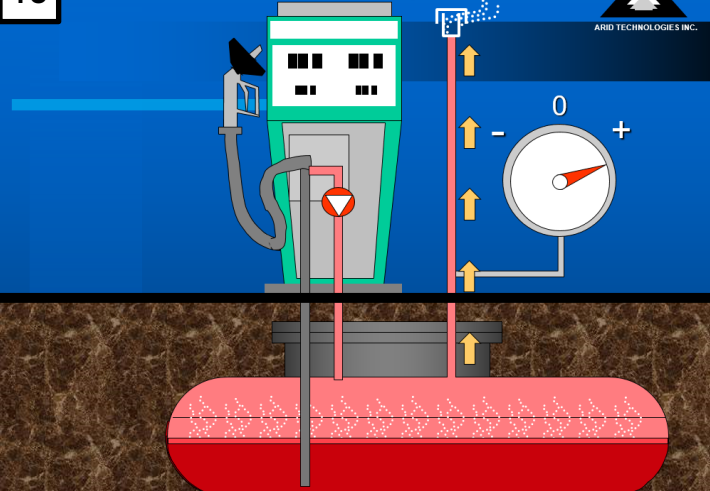
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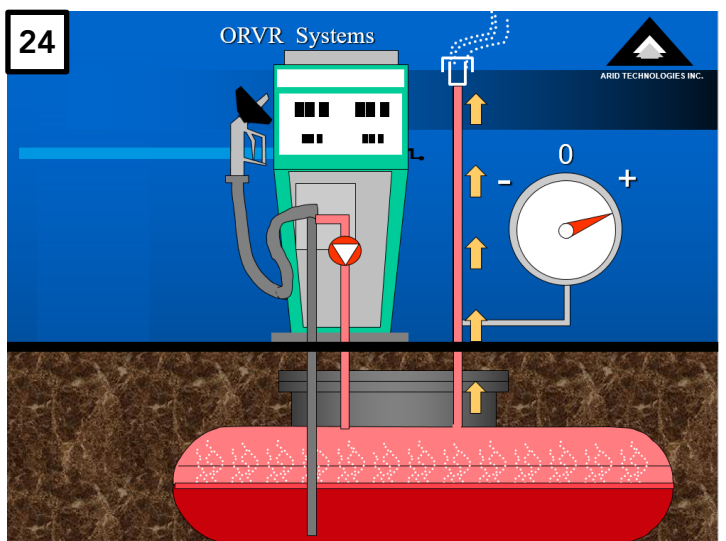
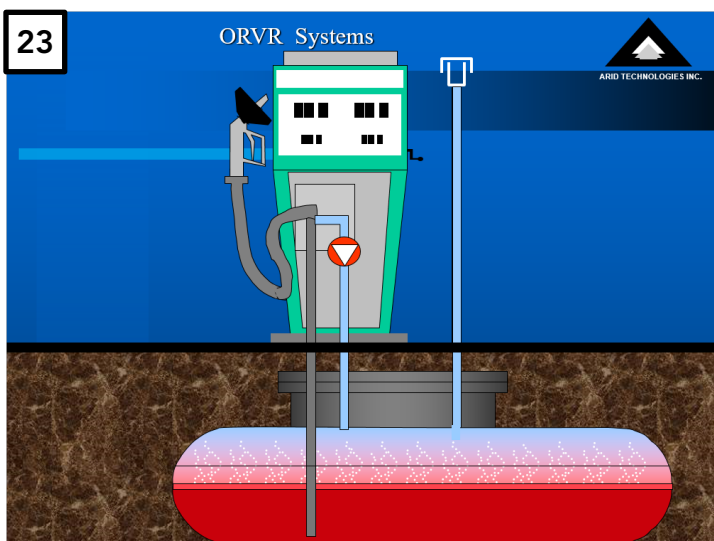
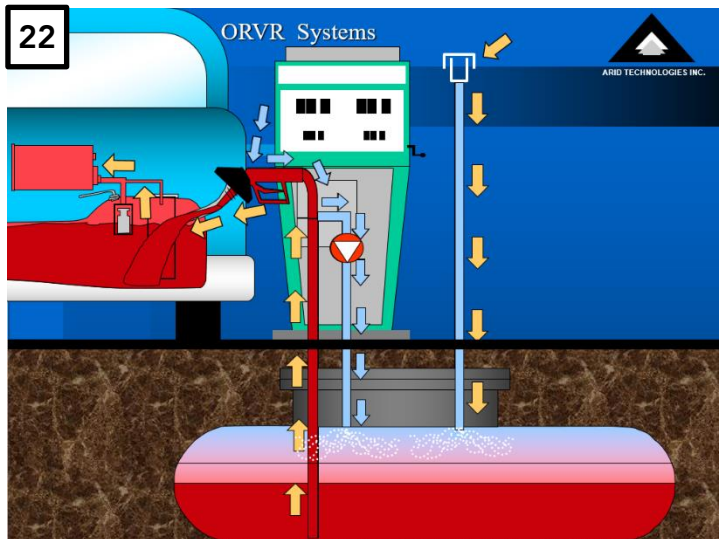
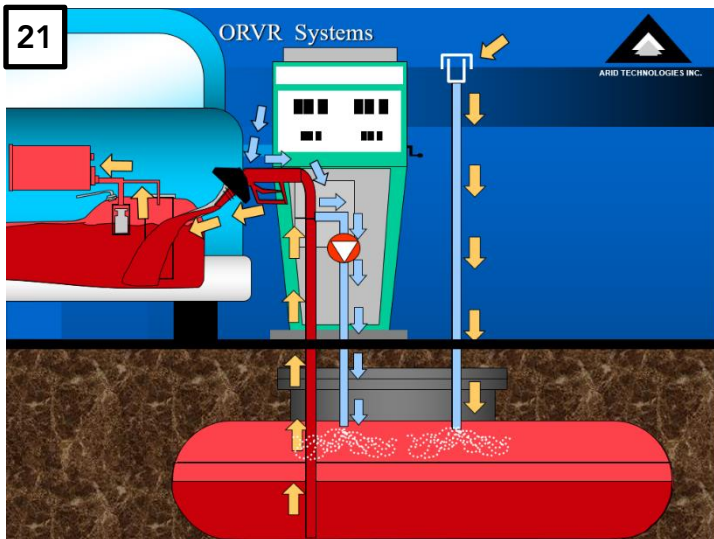
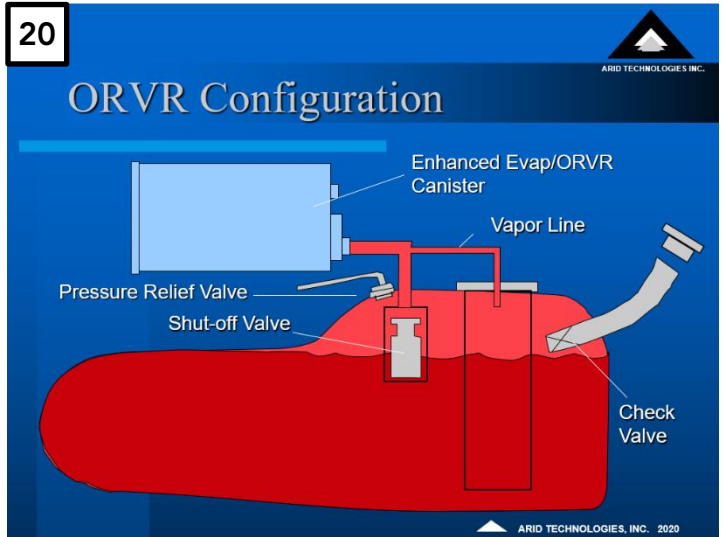
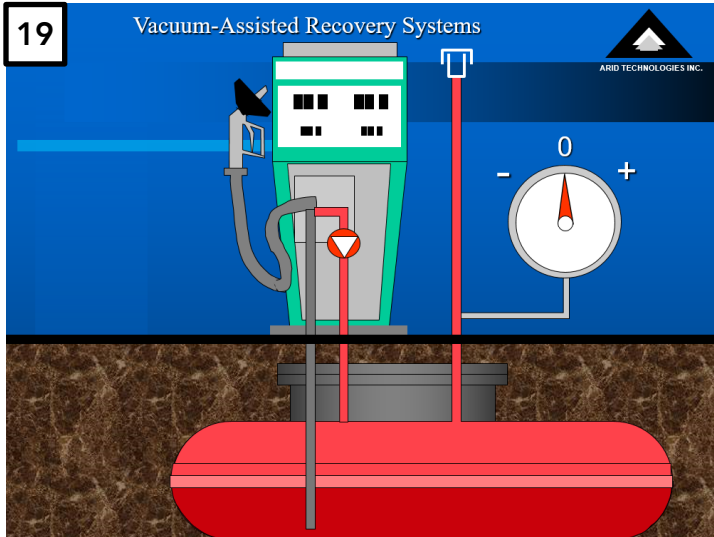
Vacuum-Assisted Recovery Systems

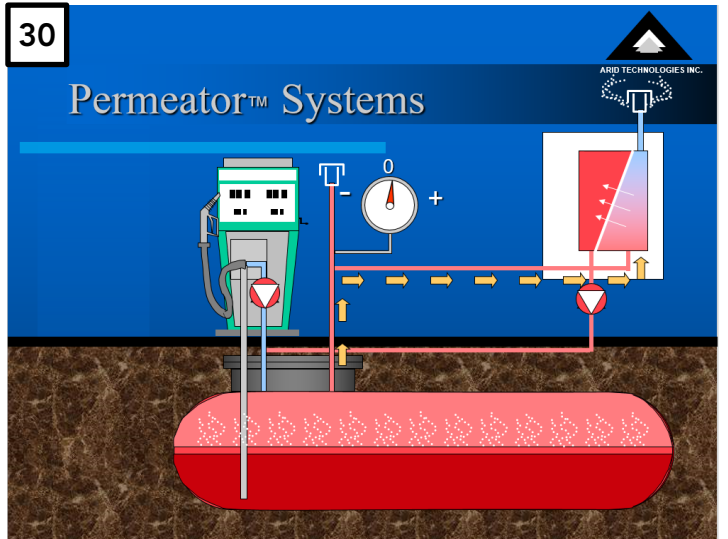
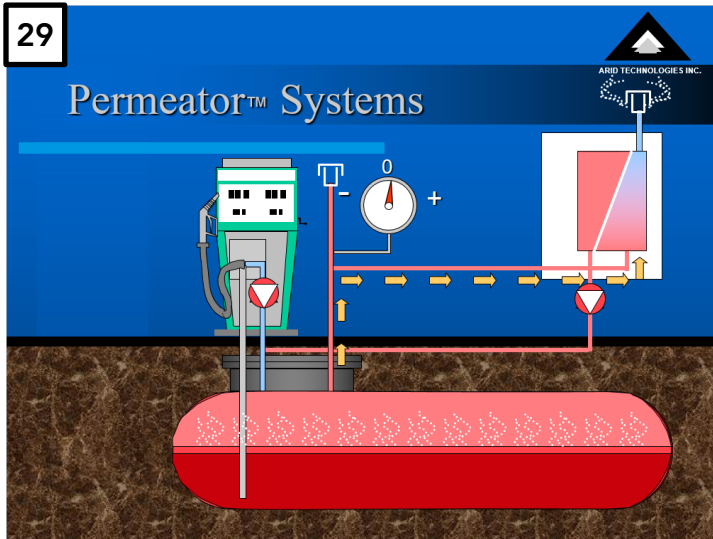
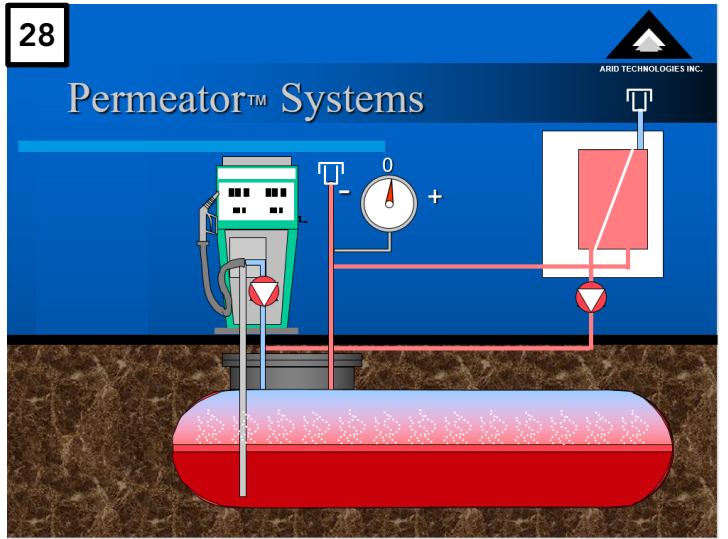
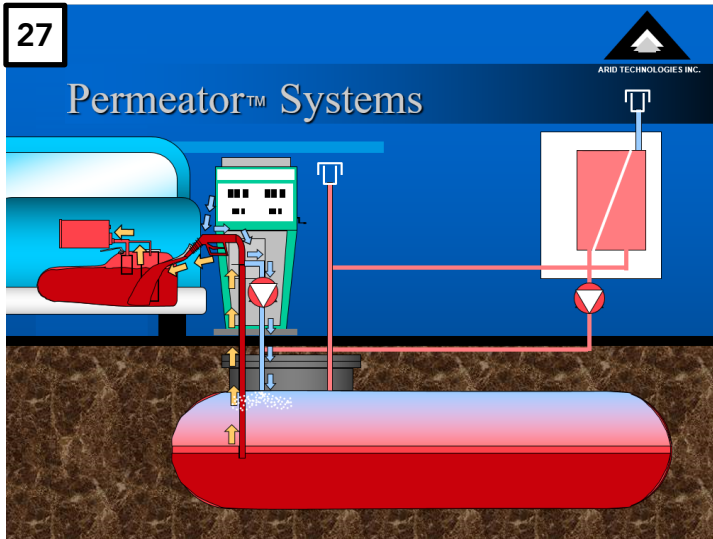
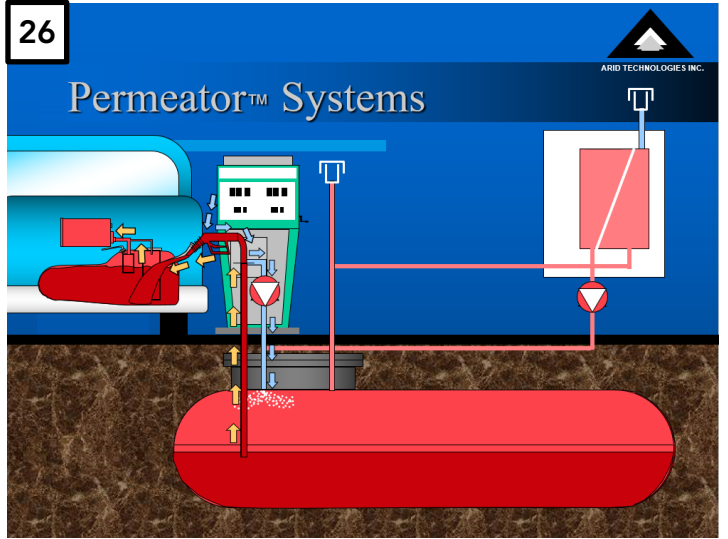
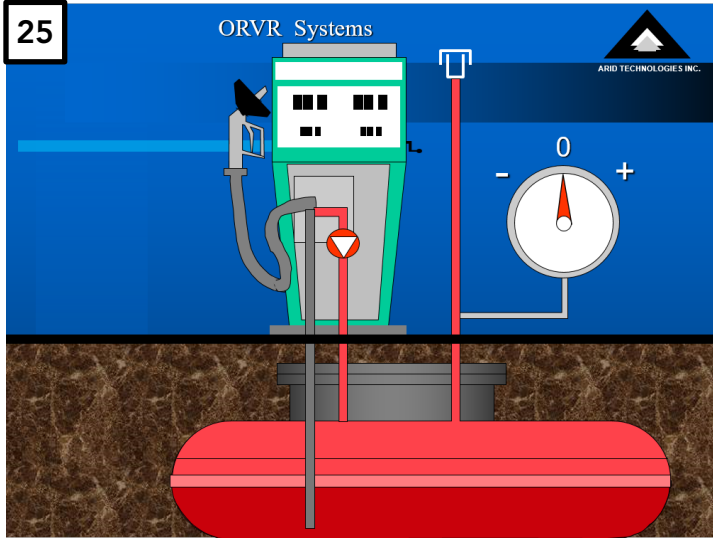


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Vacuum-Assisted Recovery Systems

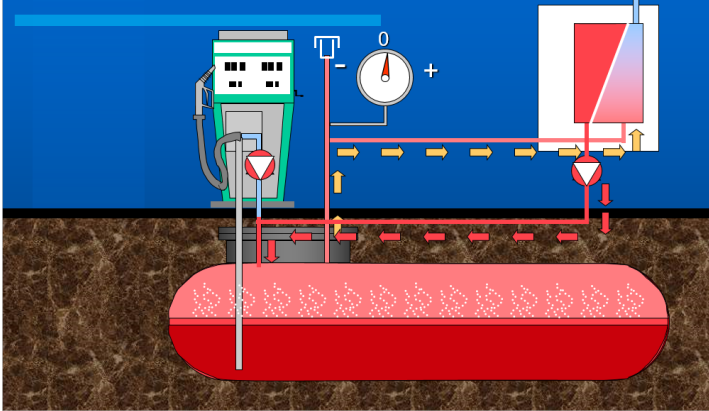






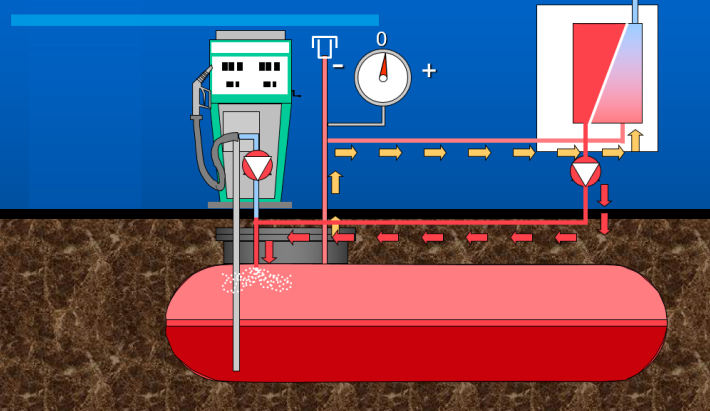
31

Permeator™ Systems



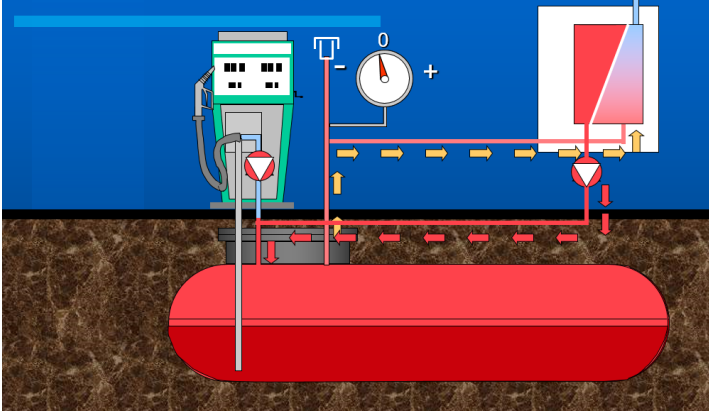
32

Permeator™ Systems



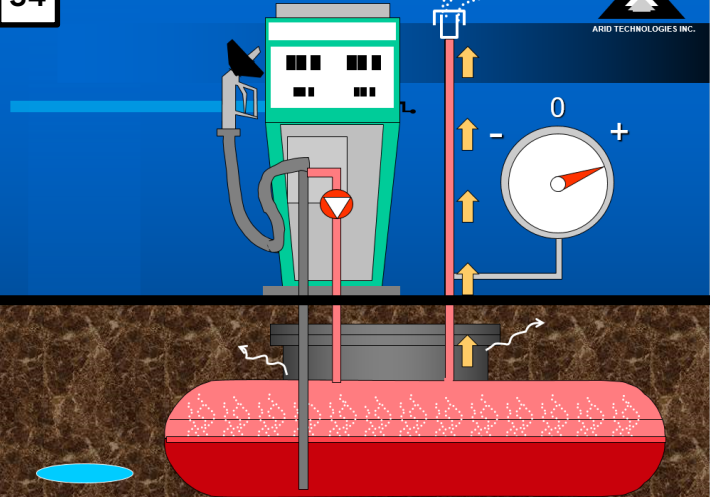
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Permeator™ Systems



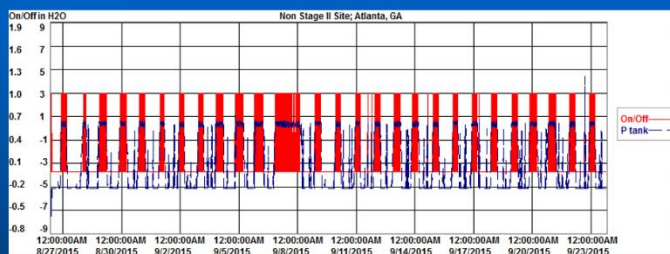
34

Groundwater Contamination



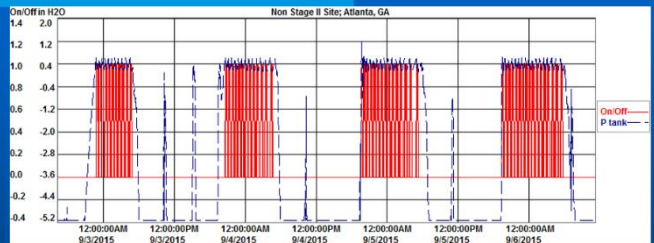
35

Non Stage II Site w/Permeator Atlanta, GA



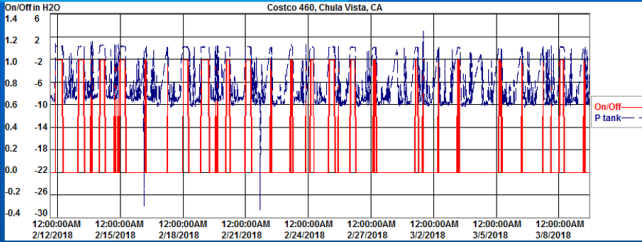
36

Non Stage II Site w/Permeator Atlanta, GA



37

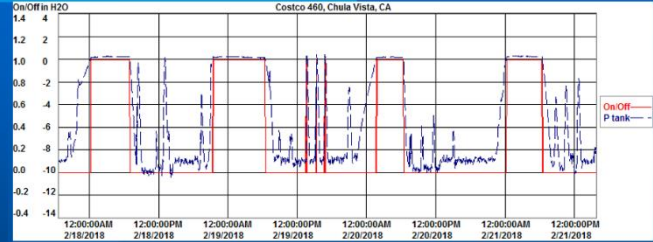
460 Chula Vista



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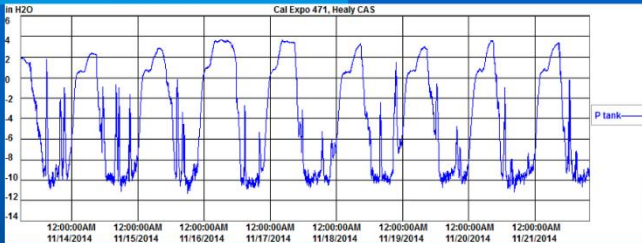
460 Chula Vista



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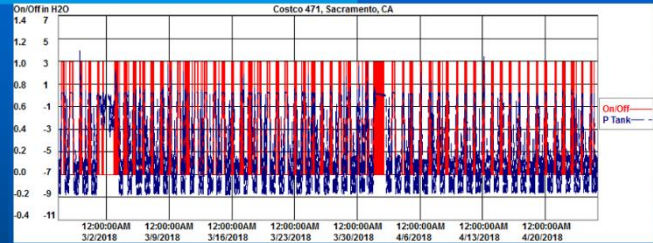
HEALY CAS, No PERMEATOR



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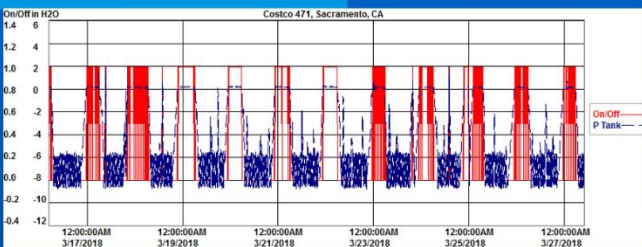
471 Cal Expo



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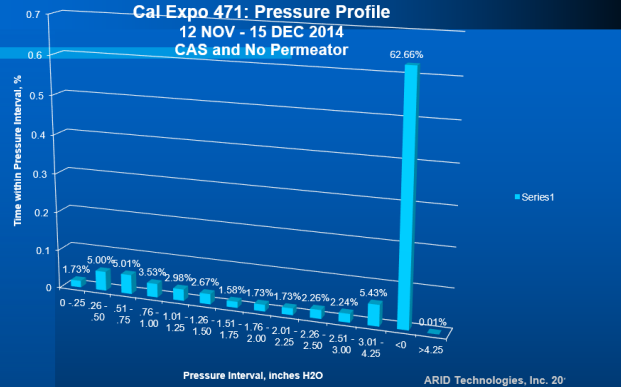
471 Cal Expo



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Cal Expo 471: Pressure Profile 12 NOV - 15 DEC 2014 CAS and No Permeator



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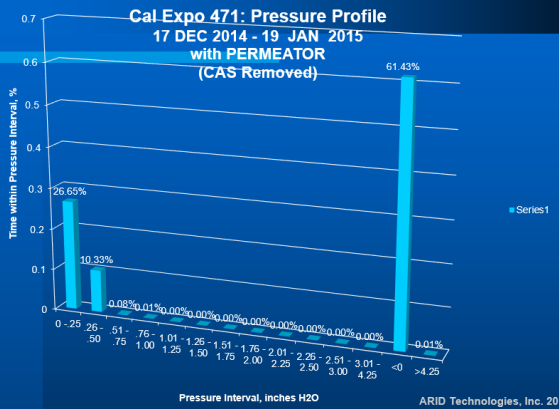
Table 9.1	P range value	minutes	Equ 9.2.1 V (ft ³)	Equ 9.2.2 Q (CFH)	Equ 9.3.1 M lbm/hr	C	MW	MV	Equ 9.4.1 E (lbm/1,000 gal)
0.005254688	0.125	825.97	4.340190414						
0.05024674	1.13	1423.94	71.54536636						
0.07666982	2.13	827.97	63.47995689						
0.0203110	0.38	2393.90	48.62441024						
0.05770824	1.38	1275.95	73.6326367						
0.08236432	2.38	1081.95	89.11446841						
0.03248555	0.63	2395.90	77.832123683						
0.06449474	1.63	753.97	48.62700089						
0.09049328	2.76	1069.96	96.82376145						
0.0420968	0.88	1689.93	71.14061765						
0.07960624	1.88	825.97	58.31831998						
0.10671182	3.63	2597.89	277.2257177						
V total			960.7075713	1.230087262	0.050478192	36	44	386	0.242683617
			960.7075713	1.230087262	0.064499912	46	44	386	0.310095733

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Healy CAS Fugitive Emissions

- E = 0.31 lb/1,000 gal
- Daily Avg <= 0.25 iwc; 85% Failure Rate
- Daily High <= 1.50 iwc; 78 % Failure Rate
- 75th percentile of 30 day pressue = +0.75 iwc
 - Failed 0.3 iwc limit
- Are Fugitives > 50% of Overall Emission Factor?
 - .50 x 0.38 = 0.19 lb/1,000 gal
 - YES; system does not meet CARB Specifications for Certification

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Table 9.1	P range value	minutes	Equ 9.2.1 V (ft ³)	Equ 9.2.2 Q (CFH)	Equ 9.3.1 M lbm/hr	C	MW	MV	Equ 9.4.1 E (lbm/1,000 gal)
0.005254688	0.125	12737.47	66.93140913						
0.05024674	1.13	0.00	0						
0.07666982	2.13	0.00	0						
0.0203118	0.38	4935.79	100.2548504						
0.05770824	1.38	2.00	0.115411651						
0.08236432	2.38	2.00	0.164721748						
0.03248555	0.63	36.00	1.169430874						
0.06449474	1.63	0.00	0						
0.09049328	2.76	2.00	0.180978988						
0.0420968	0.88	0.10	0.004209504						
0.07960624	1.88	0.00	0						
0.10671182	3.63	0.00	0						
V total			166.021012383	0.211091409	0.000695236	36	44	386	0.04180402
				0.211891409	0.01111058	46	44	386	0.053416248

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ARID Permeator Fugitive Emissions

- E = 0.053 lb/1,000 gal
- Daily Avg <= 0.25 iwc; 0% Failure Rate
- Daily High <= 1.50 iwc; 0 % Failure Rate
- 75th percentile of 30 day pressue = +0.18 iwc
 - Passed 0.3 iwc limit
- Are Fugitives > 50% of Overall Emission Factor?
 - .50 x 0.38 = 0.19 lb/1,000 gal
 - NO; system meets CARB Specifications for Certification

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CAPCOA
Air Toxics "Hot Spots" Program

**Gasoline Service Station
Industrywide Risk Assessment Guidelines**

Prepared by the:
Toxics Committee of the California Air Pollution Control Officers Association (CAPCOA),
in consultation with the:
Office of Environmental Health Hazard Assessment (OEHHA),
California Air Resources Board (CARB), and
CAPCOA Vapor Recovery Committee.
Assistance was provided by the Western States Petroleum Association (WSPA) and other industry representatives.

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C. Gasoline Content & Density of Vapors

Assumptions:

- Gasoline vapor density = 0.105 lbs/ft³
- Assumes a mixture of 70 vol% air and 30 vol% gasoline in the underground storage tank and car tank headspace; see Appendix D-2)

Content of Reformulated Gasoline

Substance	Weight % In Liquid	Weight % In Vapor
Benzene	1.0	0.3
Ethyl Benzene	1.6	NA
Toluene	8.0	NA
Xylene	2.4	NA
Methyl Tertiary Butyl Ether	11.0	NA

NA - Information not available at this time

Are benzene weight % values accurate considering Elevated vapor concentration of hydrocarbon emissions?

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Fugitive Emission Factor as Basis for Mass Emission Rate at Specific GDF

- Fugitive Emission Factor (lb/1,000 gal), E
- $E \times \text{GDF Throughput/month} = \text{lb/month}$
- Threshold and Cost Effectiveness Determined by ARB
 - **Monthly VOC Emission Limit**
 - **Monthly Benzene Emission Limit**
 - **Costs per Ton of VOC reduced**
- ARB can develop requirements to GDF based on throughput range
 - For example GDF1, GDF2, GDF3, GDF4, GDF5 for throughputs of 25 k gal, 37.5, 75, 150, and 300 k gal

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IT Backbone/Infrastructure

- Internet enabled ISD systems provided by Veeder-Root and Franklin Fueling Systems are presently in widespread use throughout CA
- ISD raw data acquisition in place as percentile metrics are presently calculated daily
- The percentile calculations can be augmented or replaced by the pressure interval calculations
 - The Pressure Interval metrics are subsequently used to calculate fugitive emission factors
 - The fugitive emission factors are then used to tabulate absolute, site specific emissions levels which are the product of (Emission Factor) x Throughput

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Modification of ISD to include fugitive and vent emission rates

- Seems like an incremental investment to include simple programming within the ISD systems provided by Veeder-Root and Franklin Fueling Systems
- Pressure data is important, but at present, these metrics are “stand-alone”
- Key is to use existing pressure data to calculate emission rates, both fugitive and vent
- The emission rates are then combined with site throughput to yield meaningful and useful metrics for ARB to use in their focused rulemaking

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