Air Resources Board

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April 20, 2005

To: All Phase I and II Enhanced Vapor Recovery (EVR) Stakeholders

The California Air Resources Board (ARB) staff recently requested your input regarding modification of the current performance specifications for cracking pressure of pressure/vacuum (P/V) vent valves used at gasoline dispensing facilities (reference January 31, 2005 Letter, Lew to EVR Stakeholders). As stated in the letter, ARB staff is considering a change to the specifications to better reflect valve performance under actual field conditions. An example of suggested changes was provided, e.g., a positive pressure setting of 2.5 to 6.0 inches water column (WC) and a negative pressure setting of 6.0 to 19.0 inches WC. Comments were received from ten groups. ARB staff assembled and posted the comments to the ARB vapor recovery web-page at: http://www.arb.ca.gov/vapor/vapor.htm. We wish to express our appreciation to those who submitted comments in response to the January 31, 2005 letter.

In general, seven comments <u>in support of</u> changing the specifications can be summarized as follows:

- All seven supported the suggested change to the positive cracking pressure range. One suggested extending the positive range to 7 inches WC.
- Six supported the suggested change to the negative cracking pressure of 6 to 19 inches WC. One suggested that negative19 inches WC seems excessive and a smaller decrease, e.g., to negative 12 inches WC, would be more appropriate.
- One comment suggested that TP-201.1E (Leak Rate and Cracking Pressure of Pressure/Vacuum Vent Valves) be modified to apply the pressure slowly up to the flow rates specified, more like the normal rate of pressure change in an underground storage tank (UST).

Two comments <u>opposed to</u> changing the specifications can be summarized as follows:

- The Steel Tank Institute expressed concern over the proposed level of vacuum, negative 19 inches WC, that could be placed on the primary tank. They stated that "…under the right set of conditions, there is a possibility that 19 inches of water column could cause a steel tank to fail structurally."
- An engineering firm strongly recommended that no changes be made to either the positive or negative cracking specifications. Arguments made in opposition

to changes to the positive specification were in regard to 1) possible interference with response time of the nozzle shut-off, 2) possible ORVR incompatibility and 3) possible interference with required EVR system A/L performance. Arguments made in opposition to changes to the negative specification included; 1) possible interference with nozzle performance regarding premature shut-off, and 2) possible safety hazard created in the return pipe by dilution of vapors to explosive range.

While not stating a preference, the Fiberglass Tank and Pipe Institute stated that the proposed P/V valve settings would not pose a problem for existing or new tanks manufactured by companies they represent.

Based on the comments received, ARB staff are particularly concerned with the comments made in regard to possible performance and safety issues associated with operation of USTs at up to negative 19 inches WC. Specifically, a 19 inch WC vacuum may; 1) cause premature shutoff for some nozzle types, 2) cause an influx of air which may lead to an explosive mixture in undesirable locations in the underground piping, and 3) cause damage to steel USTs under certain conditions.

ARB staff are not aware of performance and safety issues associated with the current negative cracking pressure specifications of 8.0 $\pm$ 2.0 inches WC. However, ARB staff are concerned with the effect of higher vacuum settings on the structural integrity of steel USTs. No information was provided by commenters that demonstrates the positive or negative effects of the higher vacuum pressures. Because of the uncertainty and the potential risk, ARB staff is no longer considering changing the negative cracking specifications. ARB staff intends to maintain the existing negative cracking pressure specifications of 8.0 $\pm$ 2.0 inches WC.

ARB staff is still considering changing the P/V vent valve positive cracking pressure specification to 2.5 to 6.0 inches WC. The proposed change to the higher positive cracking pressure should not result in systems operating at higher pressures. Certification Procedure 201 (CP-201) requires vapor recovery systems to meet certain specifications for underground storage tank pressures. The specifications require that the 30-day rolling average of the “Daily Average Pressure” and “Daily High Pressure” be $\leq$+0.25 inches WC and $\leq$+1.50 inches WC, respectively.

However, certain events such as a Phase I fuel drop under certain conditions may cause temporary increases in UST pressure that do not affect the overall performance of the system. While potentially decreasing emissions at the P/V vent, the proposed higher positive cracking pressure may result in increased emissions at the nozzle interface with balance systems, and thus increased exposure to those dispensing gasoline. The higher positive cracking pressure could also create

intermittent nozzle performance issues associated with A/L and nozzle shutoff. However, as stated above, pressure excursions during a Phase I fuel drop should occur infrequently. The proposed change to the positive cracking pressure is not considered by ARB staff to impact EVR system performance as long as the UST pressure specifications are met.

In addition to the proposed cracking pressure specification change, ARB staff is considering a modification to TP-201.1E to address the comment regarding the rate of application of pressure/vacuum to the P/V vent valves. The comment suggested that a slower rate of application of pressure/vacuum may better reflect normal operating conditions. Also, results produced using the current method may be impacted by manometer response time and inaccuracies associated with a method that relies on visual determination of the rapidly changing manometer reading. ARB staff is proposing to maintain the current flow rates but to add a surge volume (e.g., a 6 to 12 liter airtight container) to the test set-up to allow for a more gradual increase in pressure. The slower rate of increase would allow for more accurate determinations of cracking pressures relative to the currently adopted TP-201.1E. The accuracy of the method would also be improved by using a digital manometer with the capability to log maximum and minimum pressures. Staff is also considering to improve the accuracy of the method by requiring multiple (3) test runs for both the positive and negative cracking pressures and using the average as the test result. Suggestions for other possible procedural changes are requested and will be considered.

ARB staff would appreciate your comments and suggestions regarding our proposed performance specification for P/V vent valves and modification to TP-201.1E. Please provide a written response by no later than May 2, 2005. Written comments should be submitted by mail, email, or fax to:

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A copy of this letter, as well as a summary of comments and our responses, will be posted on the ARB Vapor Recovery Website at http://www.arb.ca.gov/vapor/vapor.htm.

If you have questions or need further information, please contact Kevin Mongar at (916) 322-2502 or via email at kmongar@arb.ca.gov.

Sincerely,

Pat Bennett for

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