U.S. Department
of Transportation

**Pipeline and
Hazardous Materials Safety
Administration**

400 Seventh Street, S.W.
Washington, D.C. 20590

NOV 18 2005

Mr. John L. Freiler
Girard Equipment, Inc
3301-A Tremley Point Rd, Suite 7
Linden, NJ 07036

Ref. No. 05-0243

Dear Mr. Freiler:

This is in response to your request to Mr. Danny Shelton, Federal Motor Carrier Safety Administration, U.S. Department of Transportation, for a written clarification of certain venting requirements for cargo tanks under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180), as discussed at a recent Truck Trailer Manufacturers Association/National Tank Truck Carriers Conference in Louisville, Kentucky. We have framed our response in the enclosed series of questions and answers.

I hope this information is helpful. Please contact this office should you have additional questions.

Sincerely,

Susan Gorsky
Acting Director
Office of Hazardous Materials Standards

Enclosure

cc: Mr. Danny Shelton, FMCSA

050243

178.345-10
178.342-2 (b)
180.407

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of Transportation

**Pipeline and
Hazardous Materials Safety
Administration**

400 Seventh Street, S.W.
Washington, D.C. 20590

NOV 18 2005

Ms. Rosemary Muellner
Fort Vale
126 North Virginia
La Porte, Texas 77571

Ref. No. 05-0243

Dear Ms. Muellner:

This is in response to your request to Mr. Danny Shelton, Federal Motor Carrier Safety Administration, U.S. Department of Transportation, for a written clarification of certain venting requirements for cargo tanks under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180), as discussed at a recent Truck Trailer Manufacturers Association/National Tank Truck Carriers Conference in Louisville, Kentucky. We have framed our response in the enclosed series of questions and answers.

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Sincerely,

Susan Gorsky
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400 Seventh Street, S.W.
Washington, D.C. 20590

NOV 18 2005

Mr. Chad Betts
Betts Industries
1800 Pennsylvania Avenue West
Warren, Pennsylvania 16365-0888

Ref. No. 05-0243

Dear Mr. Betts:

This is in response to your request to Mr. Danny Shelton, Federal Motor Carrier Safety Administration, U.S. Department of Transportation, for a written clarification of certain venting requirements for cargo tanks under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180), as discussed at a recent Truck Trailer Manufacturers Association/National Tank Truck Carriers Conference in Louisville, Kentucky. We have framed our response in the enclosed series of questions and answers.

I hope this information is helpful. Please contact this office should you have additional questions.

Sincerely,

Susan Gorsky
Acting Director
Office of Hazardous Materials Standards

Enclosure

cc: Mr. Danny Shelton, FMCSA

050243

178.345-10
178.342-2(b)
180.407

Pipeline and Hazardous Materials Safety Administration
Office of Hazardous Materials Safety
November 10, 2005

Staff Response to Questions and Answers Addressing Cargo Tank Design Pressure Requirements Under the Department of Transportation's Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180)

Q1. An MC-307 cargo tank has a design pressure of 30 psig. Is it permissible to have a 25 psig MC-300 series pressure relief device (PRD) device installed on the cargo tank? This PRD will limit tank pressure to 130% of the tank's design pressure (39 psig) as required by § 178.342-2(b).

A1. No. For the MC-307 cargo tank to be in compliance with the HMR, the cargo tank owner may install a 30 psig PRD or have the cargo tank re-rated to 25 psig design pressure. If the design pressure is lowered, certification by a Design Certifying Engineer is not required because the lower design pressure does not affect the structural integrity of the cargo tank.

Q2. An MC-307 cargo tank has a design pressure of 25 psig. Is it permissible to have a 30 psig PRD on the cargo tank? This PRD will limit tank pressure to 130% of the tank's design pressure (32.5 psig) as required by §178.342-2(b).

A2. No. A self-closing PRD set to open above the cargo tank's design pressure would allow the cargo tank to be operated above its design pressure in violation of § 180.407(a)(2). An MC-307 cargo tank with a design pressure of 25 psig must have a PRD that opens at 25 psig to assure that the cargo tank is not operating above its design pressure. A 25 psig PRD will limit tank pressure to 130% of the design pressure in accordance with § 178.342-4.

Q3. An MC-307 cargo tank has a design pressure of 25 psig. Is it permissible to replace the original pressure actuated vent with a 400 series PRD that will limit tank pressure to 130% of the tank's design pressure (32.5 psig) as required by § 178.342-2(b), but will not open until the pressure in the tank reaches 30 psig?

A3. No. See A2 above.

Q4. When replacing a reclosing pressure relief valve on an MC-307 tank, must a reclosing pressure relief valve meeting the DOT 400 series specification be installed on the unit?

A4. No. A "properly functioning" reclosing pressure relief valve is one that functions according to the specification in the HMR. After August 31, 1998, replacement reclosing pressure relief valves for MC 300 series cargo tanks must meet the requirements in

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§ 180.405(h)(2). That is, a replacement for any reclosing pressure relief valve must be capable of reseating to a leak-tight condition after a pressure surge, and the volume of lading released may not exceed 1 L. Specific performance requirements for these pressure relief valves are set forth in § 178.345-10(b)(3). In accordance with § 178.345-10(b)(3), each pressure relief system must be designed to withstand a dynamic pressure surge reaching 30 psig above the design set pressure and sustained above the design set pressure for at least 60 milliseconds with a total volume of liquid released not exceeding 1 L before the relief valve recloses to a leak-tight condition.

Q5. According to § 173.33(d)(3), the pressure relief system on an MC 300 series cargo tank may be upgraded to a DOT 400 series pressure relief system if "the venting capacity requirements of the original specification are met when a pressure relief valve is modified." However, the methods for determining venting capacity are different for the MC 300 series and the DOT 400 series cargo tanks. According to § 178.345-10(g), the DOT 400 series PRDs are to be flow rated at a pressure not to exceed the test pressure for the cargo tank. DOT- 407 specification vents are typically tested and rated at 1.5 times MAWP. The MC-307 specification (§ 178.342-4) requires the devices to be tested at 130%. For an MC 300 series cargo tank that is equipped with a DOT 400 series PRD, at what pressure should the flow capacity be determined?

A5. The flow capacity must be determined using the requirements of the tank's original venting capacity specification, as stated in §§ 173.33(d)(3) and 180.405(h)(3). Therefore, in your example, the DOT- 407 PRD used on an MC-307 vent must be flow-tested at 130% of the cargo tank's design pressure to accurately determine compliance with the minimum venting requirements of § 178.342-4.

Q6. Can a DOT- 407 cargo tank with a 25 psig MAWP be tested at 45 psig and have a marked test pressure of 45 psig on the nameplate? The certification requirement for a DOT- 407 cargo tank in § 178.347-5(a) states: "Each cargo tank must be tested in accordance with § 178.345-13 and this section." Paragraphs (b) and (b)(1) of § 178.345-13 require each cargo tank or cargo tank compartment to be tested hydrostatically or pneumatically pressurized as prescribed in the applicable specification. The DOT-407 specification, at § 178.347-5(b)(1), requires the test pressure for the hydrostatic test method to be at least 40 psig or 1.5 times tank MAWP, whichever is greater. However, the periodic test requirements in § 180.407(g)(1)(iv) state: "Each cargo tank must be tested hydrostatically or pneumatically to the internal pressure specified in the following table. At no time during the pressure test may a cargo tank be subject to pressures that exceed those identified in the following table." The table indicates a DOT- 407 cargo tank should be tested at "275.8 kPa (40 psig) or 1.5 times the design pressure, whichever is greater." Section 180.407(g)(1)(viii) reads: "*Hydrostatic test method*". Each cargo tank, including its domes, must be filled with water or other liquid having similar viscosity, at a temperature not exceeding 100°F. The cargo tank must then be pressurized to not less than the pressure specified in paragraph (g)(1)(iv) of this section."

Therefore, the regulatory language permits the test pressure to be not less than the greater of 40 psig or 1.5 times the MAWP in certain paragraphs and that it may not exceed the greater of 40 psig or 1.5 times the design pressure in a different paragraph. What is correct?

A6. This inconsistency will be addressed in a future rulemaking. Part 178 establishes a benchmark of "at least 40 psig or 1.5 times tank MAWP, whichever is greater" for the testing of the DOT cargo tanks at the time of manufacture. The regulations do not prohibit a manufacturer from testing and certifying a DOT- 407 cargo tank to pressures above 40 psig; therefore, the tank could be tested and marked with 45 psig. Additionally, when undergoing a required requalification pressure test, a cargo tank must be tested at the greater value of 40 psig, 1.5 times tank MAWP or the marked test pressure, whichever is greater.

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Drakeford, Carolyn <PHMSA>

From: Gorsky, Susan <PHMSA>
Sent: Friday, September 23, 2005 7:00 AM
To: Drakeford, Carolyn <PHMSA>
Subject: FW: Request for Interpretation

McIntyre
§ 173.33 (d) (3)
§ 178.345-10
§ 180.407 (g)(1)
Cargo Tank
05-0243

Another cargo tank interp. Thanks.

-----Original Message-----
From: Shelton, Danny <FMCSA>
Sent: Thursday, September 22, 2005 4:41 PM
To: Gorsky, Susan <PHMSA>
Cc: Simmons, James <FMCSA>; Staniszewski, Stanley <PHMSA>; Hochman, Charles <PHMSA>
Subject: Request for Interpretation

Good afternoon Susan. Please find attached our document which has specific question regarding venting in cargo tanks and our proposed responses. We are requesting this information because FMCSA has been requested to present a session on venting at the National Tank Truck Carriers Maintenance Council meeting in Louisville, KY the week of November &, 2005 and these issues need to be clarified.

Thanks for your help on this issue and if you need any additional information please let me know.