U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, D.C. 20590

MAR 2 9 2016

Steve Gentry
Worthington Industries
200 Old Wilson Bridge Road
Columbus, Ohio 43085

Ref. No. 15-0190

Dear Mr. Gentry:

This responds to your September 23, 2015 email requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to the design and construction of portable tanks intended for the transportation of refrigerated liquefied gases. Specifically, you describe a proposed vent line for ISO portable tanks. The manual vent line would be used to discharge lading vapor to the atmosphere in a controlled fashion, prior to the initiation of a pressure relief device. Your questions are paraphrased and answered as follows:

Q1. Is the proposed vapor vent line considered a discharge opening as it applies to § 178.277(d)(1)?

A1. No. It is the opinion of this Office that discharge openings are openings which are meant for the loading or unloading of hazardous material. Therefore, the requirements of § 178.277(d)(1) would not apply to the proposed vapor vent line, unless it is used for the loading or unloading of hazardous material.

Q2. Do vapor vent lines on portable tanks manufactured to the requirements in § 178.277 require multiple independent shut-off devices?

A2. For ISO portable tanks, § 178.277 only applies to openings which are meant for the loading or unloading of hazardous material. Therefore, a vapor vent line as described would not require multiple independent shut-off devices.

Also, please note that the installation of the proposed vent line on an approved portable tank design would constitute a modification of an approved portable tank. Thus, the portable tank with the proposed manual vent line installed would be subject to the requirements in § 178.273(e).

I trust this satisfies your inquiry. Please contact us if we can be of further assistance.

Sincerely,

Dirk Der Kinderen
Chief, Standards Development Branch
Standards and Rulemaking Division

Ciccarone
§178.277
Packaging Specs.
15-0190

WORTHINGTON
INDUSTRIES

September 23, 2015

U.S. Department of Transportation
PHMSA Office of Hazardous Materials Standards
PHH-10
East Building
1200 New Jersey Avenue, SE.
Washington, DC 20590-0001

Submitted via: phmsa.hm-infocenter@dot.gov

Dear Madam or Sir:

Worthington Cylinder Corporation is requesting an interpretation of 49 CFR 178.277 "Requirements for the design, construction, inspection and testing of portable tanks intended for the transportation of refrigerated liquefied gases."

Background Information

Worthington Cylinder Corporation manufactures ISO containers fitted within structural frames that are used to transport flammable cryogenic ladings such as liquefied natural gas (LNG), liquefied ethane and liquefied ethylene. These containers can be loaded onto and removed from a transport vehicle, typically a ship or truck, and are considered portable tanks as previously determined by U.S. Department of Transportation (interpretation reference number 07-0208 dated 21-Feb-2008).

Based on this interpretation, ISO containers are manufactured in accordance with the 49 CFR 178.277 specification referenced above.

Worthington would like to modify the piping on the ISO containers we currently manufacture to include a manual vent from the vapor space of the container. This manual vent will discharge the lading vapor phase only to atmosphere, through a separate pipe controlled by a manual valve, to a safe place on the container assembly. This manual vent will be offered as an option to our standard design.

The purpose of the manual vent is to provide the operator the capability to reduce the pressure in the container in a controlled fashion before any relief devices open. If the container is cold and the lading not used, the container will rise in pressure with time and eventually reach the relief device opening pressure setting. This situation can happen during a long transport or storage times after filling or when a partially full or empty container is warming to ambient temperatures. While the opening of the relief device is safe, it can be problematic. This also can cause discharge of the lading vapor in inconvenient places or situations. The feature of a manual vent gives the operator a chance to control this situation.

49 CFR 178.277 (d) (1) "Service equipment" of the specification referenced above requires that "each filling and discharge opening in portable tanks used for the transport of flammable refrigerated liquefied gases must be fitted with at least three mutually independent shut-off devices in series: the first being a stop-valve situated as close as reasonably practicable to the jacket, the second being a stop-valve and the third being a blank flange or equivalent device. The shut-off device closest to the jacket must be a self-closing device, which is capable of being closed from an accessible position on the portable tank that is remote from the valve within 30 seconds of actuation. This device must actuate at a temperature of not more than 121°C (250°F)." Worthington refers to the self-closing shut-off device closest to the jacket that closes on thermal conditions as a fire-block valve.

The requirement cited above for a fire-block valve and a blank flange or equivalent device in the discharge piping makes the intended use of the manual vent impractical. It is necessary to place the discharge point of the vapor at the top-most point so that vapor can discharge vertically up and away from personnel and property. This is the safest point of discharge for the vapor. The blind flange must be located at the end of the vent pipe per the CFR requirements. This makes access to the blind flange difficult and time consuming. It will also require the use of tools to remove the flange thus requiring additional time in what could be an acute situation. The fire-block valve also requires the use of a tool to open thus requiring additional time over and above that required by a normal manual valve. Removal of the fire-block valve and blind flange in the manual vent pipe would remove these encumbrances.

Cargo tanks designed and fabricated to 49 CFR 178.338 may carry the identical ladings, operate in similar environments and have basically the same design requirements as portable tanks specified by 49 CFR 178.277. However, in 49 CFR 178.338-11, the cargo tank specification expressly states that only liquid filling and liquid discharge lines require a manual shut-off valve and an automatic shut-off valve that can be shut off remotely and automatically in the case of fire. No mention is made of vapor discharge lines requiring more than one closure device. Additionally, 49 CFR 178.338-7 (b), is consistent with the fact that only liquid lines require more than one closure device. Paraphrasing 49 CFR 178.338-7 (b), ... If the leakage of a single valve, except a gas phase manual vent valve, would permit loss of flammable material, an additional closure that is leak tight at the tank design pressure must be provided outboard of such valve, providing further evidence that vapor lines are not required to have more than one closure device in the line by the cargo tank specification.

As you can see, there is what Worthington considers to be an inconsistency between 2 container specification requirements that may be in the same location and contain the identical commodities. Worthington respectfully poses the following 2 questions to DOT keeping in mind above the background information.

Question 1

Worthington does not consider the proposed vapor vent line (as defined and described above) as a discharge line as defined in 49 CFR 178.277. Does DOT concur?

Question 2

49 CFR 178.338 requires 2 independent shutoff devices for liquid lines. In as much, the assumption is made that vapor lines do not require 2 independent shutoff devices and in fact, newly fabricated

containers manufactured to 49 CFR 178.338 do not have 2 shutoff devices on the vapor lines. Does DOT concur that vapor lines on 49 CFR 178.277 and 49 CFR 178.338 do not require multiple independent shutoff devices?

Thank you for your time and consideration in this matter. If any questions arise, please contact me at 614-438-3057 or steve.gentry@worthingtonindustries.com.

Respectfully Submitted:

Steven T. Gentry

Steven T. Gentry
Regulatory Affairs Manager
Worthington Cylinder Corporation

Cc: Mr. Stan Staniszewshi – U.S. Department of Transportation stanley.staniszewski@dot.gov

Dodd, Alice (PHMSA)

From: Geller, Shelby CTR (PHMSA)
Sent: Friday, September 25, 2015 4:36 PM
To: Hazmat Interps
Subject: FW: Letter of Interpretation
Attachments: Letter of Intterpretation 092215.pdf

Dear Shante and Alice,

Attached is a request for a formal letter of interpretation.

Thanks,
Shelby

From: Gentry, Steve [mailto:Steve.Gentry@worthingtonindustries.com]
Sent: Friday, September 25, 2015 1:42 PM
To: PHMSA HM InfoCenter
Subject: Letter of Interpretation

Worthington Cylinder Corporation is requesting an Interpretation as outlined in our attached letter.

Thank you