U.S. Department
of Transportation

Pipeline and Hazardous Materials
Safety Administration

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Washington, DC 20590

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P.O. Box 264
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FEB 20 2009

Ref. No. 08-0140

Dear Mr. Burdette:

This responds to your e-mail request for clarification of the requirements for IM and UN portable tanks under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). I apologize for the delay in responding and any inconvenience it may have caused. Your questions are paraphrased and answered as follows:

Q1. A portable tank currently authorized for use (IM 101/102) that does not meet the definition of a "container" in 49 CFR 450.3(a)(2)(iv) is in need of welded repair to a portion of its framework. The portable tank's owner prefers to weld the immediate area of the framework needing repair while the designated approval agency recommends the damaged frame member be replaced. Is it permissible to repair (weld) the immediate damaged frame area or must the frame member surrounding the damaged frame be replaced?

A1. In accordance with § 180.605 (j), repairs to portable tanks must be made in accordance with requirements in the specification for the tank's original design and construction. Thus, all repairs must employ materials and workmanship at least equal in quality to the original construction while maintaining all elements of the original design. The HMR permit the owner of a portable tank the discretion to determine the type of repair that is most appropriate given the condition of the portable tank, subject to the approval of a Designated Approval Agency where indicated.

If an aggrieved owner disagrees with the decision of a Designated Approval Agency and chooses to go to another Agency, he should provide the new Agency with a written statement including the name of the previous Agency that rejected the repair and the reason for the rejection. Alternatively, the aggrieved owner may petition this Office in accordance with the procedures specified in § 178.273(d).

Q2. Is it permissible to rebuild, with modifications, the framework of a portable tank that is no longer authorized for construction to its original specification (e.g., IM 101/102)? All of the portable tank supports, frameworks, lifting and tie-down attachments would be replaced. The purchaser of the portable tank would not have

access to the original drawings or documentation supporting the original construction, but would generate documentation to support its "new" construction under the original specification. It is the understanding of the original designated approval agency that such modification to a portable tank could only be made if it were certified to a UN portable tank specification and not a former specification no longer authorized for construction.

A2. It is not permissible to rebuild the framework of a portable tank that is no longer authorized for construction. Under the scenario you describe, the portable tanks are considered to be newly constructed. Thus, they must be constructed in conformance with authorized UN portable tank specifications and certified by a Designated Approval Agency as specified in §178.273. It is the responsibility of the Designated Approval Agency to determine if sufficient drawings and documentation exists to approve the portable tanks; however, the Agency may take issue if the original welding procedures and material test certificates (MTRs) are not available.

Q3. If an IM 101 or IM 102 portable tank were constructed with adequate thickness to contain a higher maximum allowable working pressure (MAWP) capability than was originally marked on the specification plate, is it permissible to re-mark the specification plate with a higher pressure? Is this action considered a modification of the portable tank?

A3. An increase in a tank's MAWP is considered a modification and requires the approval of a Designated Approval Agency in accordance with §178.273(e). We caution any party contemplating such a modification that shell/head thickness alone does not determine a tank's MAWP. You must consider all aspects of the portable tank's design, including nozzle thickness and reinforcement, openings and their fittings or closures, piping, and the like. The Designated Approval Agency is responsible for reviewing all elements of the design that are affected by an increase in MAWP and corresponding increase in test pressure. In addition, a supplemental metal identification plate and new approval and test certificate, indicating modifications made to the tank, must be prepared as specified in § 178.273(e)(iv).

Q4. Most UN portable tanks have a minimum design temperature of -40 °C (-40 °F), which requires the use of normalized steel for the tank's shell. What temperature standards apply to portable tank supports, frameworks, lifting and tie-down attachments? Are there any charpy impact requirements for joules or foot-pounds at a specific temperature? Must they be constructed to the same integrity standards as the portable tank shell?

A4. The design and material properties of an attachment or support of a portable tank must be constructed to withstand at a minimum the loadings and temperatures specified in §178.274(b) and (h). The integrity of a portable tank and its supports, frameworks, and lifting (lugs) or tie down attachments must be such as not to compromise the lading retention capability of its shell. The manufacturer and designer, as appropriate, are expected to give due consideration to this design capability while in consultation with the Designated Approval Agency. The service in which the portable tank will be utilized

(i.e. Offshore, Arctic, or both Offshore and Arctic), must also be considered in its approval. While an attachment or support is technically outside the scope of the pressure boundary and the pressure vessel code applied to it, it would be prudent to follow the requirements of UG-20(f) of Section VIII, Division 1, of the ASME Code. If all the conditions of UG-20(f) are met, material impact criteria required by UG-84 is not required. Impact testing is normally required for a material when the combination of its thickness and minimum design metal temperature is below the appropriate curve in Figure UCS-66 of the ASME Code.

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

Sincerely,

Edward T. Mazzullo

Edward T. Mazzullo
Director, Office of Hazardous
Materials Standards

Stevens
§180.605(j)
Portable Tanks
08-0140

Drakeford, Carolyn <PHMSA>

From: Mitchell, Hattie <PHMSA>
Sent: Wednesday, May 14, 2008 11:51 AM
To: Mike Burdette
Cc: Staniszewski, Stanley <PHMSA>; Drakeford, Carolyn <PHMSA>
Subject: RE: Portable tank questions

From: Mike Burdette [mailto:msbpe@bellsouth.net]
Sent: Wednesday, May 14, 2008 10:07 AM
To: Mitchell, Hattie <PHMSA>
Cc: Staniszewski, Stanley <PHMSA>
Subject: Portable tank questions

Dear Ms. Mitchell,

Thank you for taking time to talk to me about my questions regarding portable tank damage, repair, rebuilding, modification and temperature. My questions have to do with:

1) Acceptable repairs on damaged IM 101 / 102 tanks and framework.

Repairs and modifications to the "pressure boundry" of a portable tank are governed by Codes. What are the specific guidelines for repairs to damaged framework components? 178.605(j) references repairs in accordance with requirements based on original design and construction. A specific example is a crack in a tank frame member in the junction which forms what would be called a "K" joint. A tank owner would perfer to repair the crack with a weld bead, no members are replaced and the original design and construction are not changed. An Approval Agency recommends that the broken frame member be replaced. Should a welded repair over the broken area be considered acceptable? These are non-pressure parts.

2) Rebuilding deteriorated / scrapped IM 101 portable tanks.

Equipment that has not been properly maintained is eventually scrapped. Is it acceptable for a third party to purchase this equipment and rebuild a portable tank, with modifications? I had contacted the original Approval Agency of the tank concerning this situation and was informed that if the tank were rebuilt it would be required to meet the standards of the UN Portable Tanks. Could the tank be rebuilt to the original IM 101 standards, like a new IM 101 tank? The purchaser would not possess the original drawings or any documentation regarding this equipment, but would intend to replace the pressure containment boundry and framework members as needed with identical components as originally used. If the original Approval Agency would not or could not provide a copy of the original approved drawing, an "as built" drawing of the tank in question would be generated and offered for approval of any modifications. The original metal identification plates or a new copy would be used and none of the information on these plates would be changed. Would new standards be required or is this idea not in the spirit of the regulations? What about the documentation that seems like should change hands between the seller and purchaser?

3) Modifications to existing IM 101 tanks.

I interprete the requirements for modification to these tanks to be that as long as the guidelines in 178.273(e) are followed, modifications could be done. An example would be an owner of portable tanks wishes to upgrade his fleet with total framework replacement and modifications to the service equipment. If all qualifications are met, this should be an acceptable modification. No changes are made to any information on the metal identification plate. What if a tank was built with adequate thickness to contain a higher pressure than the original MAWP? Is this also considered a modification? What are the guidelines concerning modifications that would require changes to the identification plate, almost a "recertification" of IM 101 / 102 tanks since these tanks are no longer authorized for manufacture and certification?

4) Design Temperature

The minimum design temperature for the shell of most UN portable tanks is -40°C or F which requires normalized steel to meet these requirements. There is no reference to the lifting lugs or other structural steel regarding temperature. Are there any charpy impact requirements for joules or foot-pounds at a specific temperature that must be considered? The material used for the structural components of most portable tanks is A-36 and A-500 Grade B and no cold temperature impact certifications are usually considered. This type of material has always been acceptable in the Gulf of Mexico region, but what if an owner wants to use these tanks in a very cold temperature environment in the future? The data plate states the minimum design temperature of -40° but that only considers the shell, not the structure. This could be a confusing point to the owner of a tank, almost like "the tank's good for cold temperature but not the frame or lifteyes". What is the definition of "good" for the structural materials with regard to temperature? An example of the confusion would be a fleet of rental tanks based in the Gulf of Mexico, built in 2008, that is offered a big contract in Alaska in 2012. No one would have known the opportunity would arise, but the owner would look at the data plate and see -40°C and think all requirements are met. Compared to the charpy impact / temperature requirements of DNV 2.7-1, one would question the impact properties of the structural steel being used.

Thank you for your consideration.
Sincerely,

Michael "Mike" Burdette, P.E.