



[Docket No. HM-136; Amdt. No. 178-52]

PART 178—SHIPPING CONTAINER SPECIFICATIONS

Location of Manhole Assemblies and Certification Plates on Cargo Tanks

AGENCY: Materials Transportation Bureau, Research and Special Programs Administration, D.O.T.

ACTION: Final rule.

SUMMARY: This amendment to the DOT Hazardous Materials Regulations prohibits the manhole assembly on a newly constructed MC 331 cargo tank from being located on the front head. This change will limit the location of a manhole assembly on a MC 331 cargo tank to areas which will reduce the potential hazard should an accident occur during transportation. Any MC 331 cargo tank having a manhole assembly on the front head and constructed prior to July 1, 1979, need not be modified to meet this new requirement.

Also, this amendment authorizes the use of a certification plate for MC 307, and MC 312 cargo tanks which is attached to an integral supporting structure and permits riveting as a method for certification plate attachment. This change will provide an alternate location for certification plate attachment and will permit an additional method for permanently affixing the certification plate.

EFFECTIVE DATE: December 18, 1978.

FOR FURTHER INFORMATION CONTACT:

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SUPPLEMENTARY INFORMATION: The Materials Transportation Bureau (MTB) published a notice of proposed rulemaking under Docket HM-136 on April 30, 1976 (41 FR 18093, Notice 76-4). This notice proposed that 49 CFR 178.337-6 be amended to require the manhole assembly to be located in the upper quadrant of the rear hemispherical head of MC-331 cargo tanks and that 49 CFR 178.340-10 be amended to authorize the attachment of certification plates to an integral supporting structure of MC-306, MC-307, and MC-312 cargo tanks. Also, the notice proposed that riveting and soldering be prohibited as methods for affixing certification plates to these cargo tanks. Consideration has been given to

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all comments received as they relate to matters within the scope of the notice.

I. LOCATION OF MANHOLE ASSEMBLIES

That portion of the notice which proposed the specific location of the manhole assembly on a MC 331 cargo tank was based on a recommendation of the National Transportation Safety Board (NTSB). This recommendation (NTSB No. H-73-20) was contained in the NTSB's report, identified as NTSB-HAR-73-3, covering an accident on March 9, 1972, which involved a MC 331 cargo tank transporting propane near Lynchburg, Virginia. The NTSB recommendation stated that "... the Department of Transportation and the Tank Truck Technical Council consider the desirability of amending 49 CFR 178.337-6 (Closure for manhole) to require that all manhole assemblies in MC 331 pressure vessels manufactured after a specified date be located in the upper quadrant of the rear hemispherical head to minimize the possibility of manhole-assembly collision with other vehicles or objects." The rationale for this recommendation, developed from a detailed study of the accident, was that the location and design of the manhole cover assembly in the front hemispherical tank head allowed the assembly to transmit accident impact loadings which caused failures in the head and shell materials. On the basis of the NTSB report and recommendation, the MTB published Notice 76-4 affecting § 178.337-6.

Enumerated in the notice were a number of reasons why manhole assemblies should not be located in the front head of MC 331 cargo tanks:

1. The upper portion of the front head of a MC 331 cargo tank is more likely to be exposed to high impact loadings in an accident than would the similar location at the rear of the tank.

2. The nature of a manhole assembly is such that frontal impact loadings would dissipate energy over a relatively stiff manhole cover and manhole reinforcing materials.

3. Impact loadings hitting a manhole assembly could allow the assembly to transmit these loadings to the head and shell materials causing failure.

4. If a tank head rather than a manhole assembly receives an initial impact, the shock would be distributed rather than concentrated in a limited area susceptible to failure.

The majority of commenters did not argue with these reasons but they took exception to the proposed regulation which would require the manhole assembly to be located in the upper quadrant of the rear hemispherical head. The following is a summary of

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the comments which argue against the proposed manhole assembly location:

1. Rear heads on MC 331 cargo tanks are not always hemispherical but quite often elliptical, and installation of manhole assemblies on these type heads is very difficult unless installed at the center line.

2. When the manhole assembly is on the center line of the rear head rather than a rear quadrant, the manhole cover plate can be recessed so gauges and other appurtenances can be used at that location for protection during incidents.

3. Restricting manhole assemblies to the rear head would effectively prohibit construction of compartmentized tanks, would preclude the location of manhole assemblies in the shell, and would conflict with the present requirements for manhole assemblies to be located in the top of the tank when designed and constructed for chlorine service.

4. In case of overturn, a center line location in the rear head would provide a safer location than the upper quadrant.

The MTB has carefully reviewed these comments and basically agrees with the majority of commenters that restricting the location of the manhole assembly to the upper quadrant of the rear hemispherical head of a MC 331 cargo tank is not necessary.

Several commenters expressed different views. One commenter argued that a manhole assembly located at the center of the front head of a tank would add strength to the head in the event of a frontal impact. The MTB does not agree and is of the opinion that since most accidents occur when a cargo tank is moving forward, if an impact is to occur to the tank, it will probably occur to the front head. When this impact occurs, it is better for the impact to be distributed across the head which is convex and is the strongest portion of the tank rather than have the impact against a flat surface such as a manhole cover. Because the manhole cover is flat and relatively stiff, the impact will be transmitted to the head and shell and not absorbed by the manhole cover.

Another commenter stated that a manhole assembly located in the shell would permit an impact force to be distributed over a greater and stronger area than either head and the impacts upon such a manhole assembly would be less intense than one in either head. The MTB agrees that location of a manhole assembly in the tank shell is an acceptable location. Currently, the regulations prescribe the manhole assembly to be located on the top of the tank when used for chlorine service. Since experience has not dictated a necessity to change this man-

hole assembly location, even in chlorine service, the MTB has not prohibited the manhole assembly from being located in the tank shell.

In summary, the MTB agrees with the NTSB findings and feels the manhole assemblies should not be permitted in the front head of MC 331 cargo tanks because of the reasons enumerated in the notice of proposed rulemaking. However, based upon a review of the comments, the MTB does not agree with the NTSB that it is necessary for manhole assemblies on all MC 331 cargo tanks constructed after a specific date to be located in the upper quadrant of a rear hemispherical head.

II. LOCATION OF CERTIFICATION PLATES

That portion of the notice which proposed the attachment of the certification plate to an integral supporting structure of MC 306, MC 307, and MC 312 cargo tanks as an alternate to attachment of the plate to the cargo tank shell was submitted by the Truck Trailer Manufacturers Association (TTMA). In their petition, TTMA also requested that riveting be permitted as another method of affixing cargo tank certification plates. TTMA's reasons for support of these proposed changes were contained in the preamble of the notice of proposed rulemaking.

There was only one objection raised by a commenter regarding the proposed change involving attachment of the certification plate to an integral supporting structure. This commenter stated that the present wording is adequate and the proposed change is more restrictive since it eliminates other possible areas (other than the tank shell) of affixing the certification plate. It was suggested by the commenter that the present wording of the regulation remain unchanged and that MTB provide an interpretation to TTMA which permits the certification plate to be attached to a structural member of a cargo tank. The MTB disagrees with this commenter since the definition for a cargo tank in § 171.8 specifically means a tank and does not include supporting structural members. In addition, the second sentence of § 178.340-10(b) in the present regulations specifies that the certification plate "shall be permanently affixed to the tank" and not any other location.

A few commenters also stated that the certification plate requirements for specification cargo tanks differ from the certification plate requirements for tanks built to ASME Code requirements. They state the ASME Code plates are different in configuration and information content; therefore, the reference made in the notice to attachment of the certification plate as required by the ASME Code is not appropriate. It was also pointed out that pressure vessel inspectors may be reluctant to stamp a combined ASME/DOT plate since they would be implying certification of compliance with DOT regulations which is not

their area of expertise. Based on knowledge and information available, the MTB disagrees with these commenters. It is true the ASME Code plate requires certain information that differs from the DOT certification plate; however, MTB has determined that there are safety advantages associated with attaching only one plate to a tank. Therefore, one plate may be used to satisfy both DOT and ASME requirements. In addition, MTB has not been informed of pressure vessel inspectors objecting to certifying a combined DOT/ASME plate required to be affixed to a tank shell.

Some of the other differences between this amendment and the notice proposed on April 30, 1976, should be reiterated.

The proposed prohibition against affixing certification plates by means of riveting and soldering has been dropped. Several commenters strongly objected to the prohibition on the basis that it would increase production costs without any commensurate safety increase and there is no justification for the economic impact of removing, relocating, and resealing plates that are riveted or soldered. After reconsideration, the MTB agrees with these comments and has authorized riveting and soldering as means of attaching certification plates.

The proposal to require the certification plate to be of such construction, or attached in such a way, that removal of the plate would, depending on where it is attached, either destroy the structural integrity of the tank or the plate so as to prevent their future use has been reconsidered. A commenter objected to such a provision on the basis that the proposed safeguards are an unnecessary expense without any commensurate value to the user or purchaser of the tank. The commenter also observed the certification plate would have to be paper thin in order to be destroyed if removal were attempted and this is contrary to the requirement that the plate be of such thickness to withstand corrosion and abrasion from general usage. The MTB has determined that this provision is unnecessary because the regulations currently provide adequate sanctions against improper certification of design and construction of a cargo tank packaging. See §§ 173.24(c) and 178.0-2(a) and (b).

In summary, § 178.340-10(b) has been amended to provide the option of attaching a certification plate to the tank shell or an integral supporting structure. Riveting and soldering are now authorized as acceptable methods for affixing a certification plate. The related provisions addressing the integrity of the plate and its removal have been deleted from the section.

In consideration of the foregoing, Part 178 of Title 49, Code of Federal Regulations is amended as follows:

1. In § 178.337, § 178.337-6 is amended

ed by adding paragraph (b) to read as follows:

§ 178.337 Specification MC 331, tanks constructed of steel, primarily for transportation of compressed gases as defined in the Compressed Gas Section.

§ 178.337-6 Closure for manhole.

(b) The manhole assembly of cargo tanks constructed after June 30, 1979, may not be located on the front head of the tank.

2. In § 178.340, § 178.340-10 the introductory text of paragraph (b) is revised to read as follows:

§ 178.340 General design and construction requirements applicable to specification MC 306 (§ 178.341), MC 307 (§ 178.342), and MC 312 (§ 178.343) cargo tanks.

§ 178.340-10 Certification.

(b) Metal certification plate. Each cargo tank, or tank compartment if constructed to a different specification, must have a metal certification plate attached to its shell or to an integral supporting structure. The certification plate, not subject to corrosion, must be located on the right side, near the front, in a place readily accessible for inspection. Each plate shall be permanently affixed by means of brazing, welding, soldering, riveting, or other equally suitable means. The plate must be marked in characters at least 3/16-inch high by stamping, embossing, or other means of forming letters into or on the metal of the plate itself at least the information prescribed in paragraphs (b)(1) and (b)(2) of this section. The plate may not be painted as to obscure the marking thereon. A combination ASME/DOT certification plate is authorized.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53(e).)

NOTE.—The Materials Transportation Bureau has determined that this final amendment will not have a major economic impact under the terms of Executive Order 12044 and DOT implementing procedures (43 FR 9582). A regulatory evaluation is available for review in the docket.

Issued in Washington, D.C. December 1, 1978.

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Director,

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