



DEPARTMENT OF TRANSPORTATION

MATERIALS TRANSPORTATION BUREAU

WASHINGTON, D.C. 20590

36211

[49 CFR Parts 171, 172, 173, 174, 176, 177, 178, 179]

[Docket No. HM-115; Notice No. 79-3]

Cryogenic Liquids; Extension of Comment Period and Additional Proposals

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

ACTION: Notice of Proposed Rulemaking; Extension of time to file comments.

SUMMARY: On March 8, 1979, MTB published a Notice of Proposed Rulemaking (NPRM) and scheduled a public hearing under Docket HM-115, Notice 79-3 (44 FR 12826), which proposed to amend the Hazardous Materials Regulations (49 CFR Parts 110-189) by establishing requirements for the transportation of certain cryogenic liquids. On April 5, 1979, a document was published in the Federal Register (44 FR 20461) making corrections and additional changes to NPRM. This notice makes additional changes to the NPRM and extends the comment period.

DATE: The time for filing comments on the proposals in Docket HM-115, which appeared in the Federal Registers of March 8, 1979 (44 FR 12826) and April 5, 1979 (44 FR 20461) and as modified herein, is extended from June 28, 1979, to October 9, 1979.

FOR FURTHER INFORMATION CONTACT: Paul H. Seay, Jr., Office of Hazardous Materials Regulation, 2100 Second Street, S.W., Washington, D.C. 20590. (202) 755-4906.

SUPPLEMENTARY INFORMATION: On April 17, 1979, a public hearing was held on the proposals in Docket HM-115, Notice 79-3. All but one of the hearing participants requested an extension of time to file comments on Docket HM-115 indicating that extra time was needed to properly assess and analyze the proposal. The MTB believes additional time should be allowed and therefore the time for filing comments is extended as indicated. In addition, further review of Docket HM-115 by MTB has indicated areas of the proposal that can and should be modified. This review also indicated a need for development of more definitive acceptance criteria for cargo tanks used in oxygen service. An analysis and explanation of these changes follow:

1. *Sections 173.318 and 178.338-6. Manholes.* In the Advance Notice of Proposed Rulemaking (ANPRM) published in this docket (39 FR 7950, March 1, 1974; 39 FR 32624, September 10, 1974), a larger number of hazardous materials would have been permitted in the proposed MC 338 cargo tank than were proposed in the NPRM (44 FR 12826, March 8, 1979). Because of the properties of the more limited number of hazardous materials now proposed for MC 338 cargo tanks, the need for manholes on these tanks has diminished. The changes would eliminate the proposed requirement for a manhole for MC 338 tanks except for those tanks used or intended for use for oxygen service. Because of the reactions of oxygen with various contaminants, cargo tanks used or intended for use with Oxygen, cryogenic liquid, would be required to have manholes. This proposed requirement would be applicable to all cargo tanks in oxygen service, regardless of size.

2. *Section 178.338-1(f). Design parameters for evacuated jackets.* Most commenters to date to the NPRM have requested a simple reference to the Compressed Gas Association (CGA) recommended specification, CGA-341, for all jackets. However, the CGA-341 design parameters apply not only to evacuated jackets but also to non-evacuated jackets. The MTB has issued exemptions for cargo tanks using non-evacuated jackets that are not in accord with the CGA-341 recommended specification. The MTB does not believe CGA-341 requirements should be imposed for non-evacuated jackets where experience gained under exemption has validated a different design. The MTB has incorporated some of the CGA recommendations for evacuated jackets and has added references to more ASME Code design factors. Basically, CGA-341 only references the ASME Code for shell design. The CGA recommendation does not reference the appropriate ASME Code requirement for designs of heads convex to pressure and stiffening rings for cylindrical shells under external pressure.

3. *Section 178.338-13. "g" Loading.* The Proposed MC 338 specification anticipates two basic designs. The first design encompasses an inner tank that not only contains the cargo, but also acts as the main structural member of the cargo tank. The insulation in this

design is affixed to the inner tank and shrouded with a metal jacket. The second design encompasses an inner tank supported within an outer tank. In this design, the outer tank not only provides a vacuum envelope but also constitutes the structural member used in place of a motor vehicle frame. The ANPRM and NPRM have proposed a "g" loading of two longitudinal and lateral and three vertical for the tank that constitutes, in whole or in part, the structural member used in place of a motor vehicle frame. The proposed "g" loading requirement for these tanks is consistent with 49 CFR § 178.337-13 for MC 331 cargo tanks carrying other pressurized hazardous materials. Although the CGA-341 specification, originally issued in 1970 and revised in June 1972, recommends a "g" loading for these tanks of two in all directions, including the vertical, the CGA submittal of October 15, 1974, in response to the ANPRM in docket HM-115, did not question the proposed three "g" vertical loading for tanks constituting structural members.

The ANPRM and NPRM, however, also proposed certain "g" loading requirements for the inner tank in the second design discussed above. This tank does not constitute a structural member used in place of a motor vehicle frame. The proposed "g" loading requirements were one and one-half vertical upward, two longitudinal and lateral and three vertical downward. The CGA questioned the longitudinal, lateral and vertical downward requirements in its response to the ANPRM. Additionally, the CGA and a number of other commenters at the April 17, 1979, public hearing on this docket questioned the "g" loading requirements and it is the MTB's understanding that this was with regards to this inner tank. The MTB has reconsidered this matter and now proposes to require the inner tank in this design to be able to withstand "g" loadings of one and one-half longitudinal and lateral and two vertical downward. As changed this agrees with the CGA's revised recommended specification CGA-341 and will not compromise the safety of the cargo tank because the outer tank, which is the structural member used in place of a motor vehicle frame, is proposed to be designed to "g" loadings of three vertical and two longitudinal and lateral.

4. *Section 178.338-16(b). Weld*

inspection. The NPRM, in effect, excluded pneumatic testing under the ASME Code. This was not the intent of the MTB. Rather, it was the intent of the MTB to assure cleanliness in cargo tanks used for the shipment of Oxygen, cryogenic liquid. The revision of this paragraph should clarify the matter.

5. Section 178.338-16(d). Verification of interior cleanliness. In the NPRM, § 178.338-16(d) requires a verification of cleanliness to be made using a method delineated in § 178.338-15 for tanks constructed for oxygen service. No parameters were proposed to determine when a tank is "clean." The MTB is of the opinion that the establishment of cleanliness parameters may be necessary and, therefore, solicits specific comments by all interested parties on this issue.

These changes are hereby introduced in the rulemaking proposal in Docket FM-115 (44 FR 12826, 44 FR 20461) for consideration:

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

1. In proposed § 173.318(a), a new paragraph (5) is added to read as follows:

§ 173.318 Cryogenic liquids in cargo tanks.

(a) * * *

(5) A cargo tank used to transport Oxygen, cryogenic liquid, must be provided with a manhole (see § 178.338-6 of this subchapter).

PART 178—SHIPPING CONTAINER SPECIFICATIONS

2. In proposed § 178.338-1, paragraph (f) is revised to read as follows:

§ 178.338-1 General requirements.

* * * * *

(f) An evacuated jacket must be in compliance with the following requirements:

(1) The jacket heads, shell and stiffening rings must be designed in accordance with paragraphs UG-28, UG-29 and UG-33 of the ASME Code. In paragraph UG-28(f) the external design pressure will be based on a minimum of 7.5 psig. The jacket need not be marked with the ASME stamp.

(2) If the jacket also supports additional loads such as the weight of the tank and lading, the combined stress, computed according to the formula in § 178.338-3(b), may not exceed 25 percent of the minimum specified tensile strength.

3. Proposed § 178.338-6 is revised to read as follows:

§ 178.338-6 Manholes.

(a) Each tank in oxygen service must be provided with a manhole conforming to paragraph UG-46(g)(1) and other requirements of the ASME Code.

(b) Each tank having a manhole must be provided with a means of entrance and exit through the jacket or the jacket must be marked to indicate the manway location on the tank.

(c) When a manhole is provided, it must be located at the rear or on the rear head of the tank.

4. In proposed § 178.338-13, paragraph (e) is revised to read as follows:

§ 178.338-13 Supports and anchoring.

* * * * *

(e) When a tank is supported within the jacket by structural members, these members must be designed to withstand minimum static loadings of one and one-half vertical upward, lateral and longitudinal, and two vertical

downward times the weight of the tank, under any condition of loading, using a safety factor of four, based on the ultimate strength of the material at the coldest temperature to which the members will be subjected. When load rings in the jacket are used for supporting the tank, they must be designed to carry the fully loaded tank at the above specified static loadings, plus external pressure.

5. In proposed § 178.338-16, paragraph (b) is revised to read as follows:

§ 178.338-16 Inspection and testing.

* * * * *

(b) *Weld inspection.* All welds in or on the cargo tank shell or heads shall be radiographed in accordance with the ASME Code. A tank which has been subjected to inspection by the magnetic particle method, the liquid penetrant method, or any method involving a material deposit on the interior tank surface must be cleaned to remove any such residue by scrubbing or equally efficient mechanical means and all such residue and cleaning solution must be removed from the tank prior to final closure of the tank.

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(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53 App. A to Part 1, and paragraph (a)(4) of App. A to Part 106.)

Note.—The Materials Transportation Bureau has determined that the proposed notice if implemented would not result in a major economic impact under the terms of Executive Order 12044 and DOT implementing procedures (43 FR 9583). A regulatory evaluation is available in the public docket.

Issued in Washington, D.C. on June 12, 1979.

Alan I. Roberts,
Associated Director for Hazardous Materials
Regulation Materials Transportation Bureau.

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