# DEPARTMENT OF TRANSPORTATION
## HAZARDOUS MATERIALS REGULATIONS BOARD
WASHINGTON, D.C. 20590

[ 49 CFR Parts 173, 178 ]

[Docket No. HM-31; Notice 69-28]

## TRANSPORTATION OF HAZARDOUS MATERIALS

### Extension of Specification 3HT Cylinder Service Life

The Hazardous Materials Regulations Board is considering amending §§ 173.34, 173.302, and 173.304 of the Hazardous Materials Regulations to extend the service life of specification 3HT cylinders for aircraft use from 12 years to 15 years without relinquishing the 4380 pressurization cycle limitation. It is proposed to amend § 178.44–13 to change the reference to safety device requirements.

Interested persons are invited to give their views on this proposal. Communications should identify the docket number and be submitted in duplicate to the Secretary, Hazardous Materials Regulations Board, Department of Transportation, 400 Sixth Street SW., Washington, D.C. 20590. Communications received on or before October 28, 1969, will be considered before final action is taken on the proposal. All comments received will be available for examination by interested persons at the Office of the Secretary, Hazardous Materials Regulations Board, both before and after the closing date for comments.

The basis for this proposal is a petition submitted by the Air Transport Association requesting that the retest and condemnation requirements applicable to specification 3HT cylinders be based on a more realistic cylinder longevity factor. The petitioner has requested that the 12-year period be extended to 24 years contingent on satisfactory results of a triennial inspection after the 12-year period. However, the Board is considering only a 3-year extension at this time until a complete study of the requalification requirements, including the visual inspection criteria for 3HT cylinders, can be made. This extension is consistent with a special permit recently issued by the Board. Presently 49 CFR 173.34(e)(13)(iii) reads as follows:

> A cylinder must be condemned at the termination of a 12-year period following the date of the original test or after 4,380 pressurizations (12 x 365), whichever comes first. If a cylinder is recharged more than once a day, an accurate record of the number of such rechargings must be maintained.

When specification 3HT was proposed by the compressed gas industry over 10 years ago, and made a part of the regulations by the Interstate Commerce Commission, a 12-year longevity period following the date of original test was specified after which time a cylinder was to be condemned (no longer refilled). Inasmuch as the 3HT cylinders are lighter and have higher wall stresses than the specification 3AA cylinders used in many compressed gas services, it was considered appropriate to include a cycling and maximum service life limit in the regulations. This specified service life was established arbitrarily because information on actual service experience was not available at the time. The 4380 pressurization cycle limit was based on cyclic tests conducted by the manufacturers and 12 years was arrived at by assuming one recharging per day, 365 days per year. From experience accumulated during the interim, the Air Transport Association contends the recharging rate of cylinders is considerably less than once per day. The Board has been advised that, based on a survey of the airlines, oxygen cylinders are being recharged in cycles ranging from 5 days for crew-oxygen cylinders to a year or more for passenger-oxygen cylinders. Most rechargings are of the "topping off" type for cylinders partially used; therefore, complete pressurization cycles are seldom experienced. It was stated that the recharging frequency of 3HT cylinders used in other applications (aboard aircraft) is even less than the frequency for the oxygen cylinders.

The Board believes that the most significant factors concerning the life limit for these rechargeable cylinders are the number of rechargings to which they are subjected and possible impairments to their structural integrity caused by corrosion, nicks, scratches, etc. However, in consideration of the current triennial hydrostatic retest and visual inspection requirements, the Board believes that extending the longevity of 3HT cylinders as proposed herein is reasonable and warranted.

It is also proposed to make editorial changes for clarification in the sections affected by this notice and to amend § 178.44–13(a) to make proper reference to safety device requirements.

In consideration of the foregoing, it is proposed to amend 49 CFR Parts 173 and 178 as follows:

I. Part 173 would be amended as follows:

A. In § 173.34 paragraph (e)(13)(iii) would be amended to read as follows:

**§ 173.34 Qualification, maintenance and use of cylinders.**

* * * * *

(e) * * *

(13) * * *

(iii) A cylinder must be condemned at the termination of a 15-year period following the date of the original test or after 4380 pressurizations, whichever occurs first. An accurate record for each cylinder must be maintained by its owner, or his agent, indicating the number of pressurizations made.

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B. In § 173.302 paragraph (a)(2) would be amended to read as follows:

**§ 173.302 Charging of cylinders with non-liquefied compressed gases.**

(a) * * *

(2) Spec. DOT-3HT (§ 178.44 of this chapter) cylinders for aircraft use having a maximum service life of 15 years. Authorized only for nonflammable gases. Cylinders must be equipped with safety relief devices only of the frangible disc type which meet the requirements of § 173.34(d). Each frangible disc must have a rated bursting pressure which does not exceed 90 percent of the minimum required test pressure of the cylinder. Discs with fusible metal backing are not permitted. Spec. 3HT cylinders may be shipped only when packed in strong outside packagings.

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C. In § 173.304 paragraph (a)(2) Table Note 7 would be amended to read as follows:

**§ 173.304 Charging of cylinders with liquefied compressed gas.**

(a) * * *

(2) * * *

NOTE 7: Spec. DOT-3HT (§ 178.44 of this chapter) cylinders for aircraft use having a maximum service life of 15 years. Authorized only for nonflammable gases. Cylinders must be equipped with safety relief devices only of the frangible disc type which meet the requirements of § 173.34(d). Each frangible disc must have a rated bursting pressure which does not exceed 90 percent of the minimum required test pressure of the cylinder. Discs with fusible metal backing are not permitted. Spec. 3HT cylinders may be shipped only when packed in strong outside packagings.

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II. Part 178 would be amended as follows:

A. In § 178.44–13 paragraph (a) would be amended to read as follows:

**§ 178.44 Specification 3HT; inside containers, seamless steel cylinders for aircraft use made of definitely prescribed steel.**

**§ 178.44–13 Safety devices and protection for valves, safety devices, and other connections, if applied.**

(a) Must be as required by applicable regulations in Part 173 of this chapter (see §§ 173.34(d), 173.302(a)(2), and 173.304(a)(2) Note 7 of this chapter).

This proposal is made under the authority of sections 831–835 of title 18, United States Code, section 9 of the Department of Transportation Act (49 U.S.C. 1657) and title VI and section 902 (h) of the Federal Aviation Act of 1958 (49 U.S.C. 1421–1430 and 1472(h)).

Issued in Washington, D.C., on August 15, 1969.

C. P. MURPHY,
*Rear Admiral, U.S. Coast Guard, by direction of Commandant, U.S. Coast Guard.*

R. N. WHITMAN,
*Administrator, Federal Railroad Administration.*

F. C. TURNER,
*Administrator, Federal Highway Administration.*

SAM SCHNEIDER,
*Board Member for the Federal Aviation Administration.*

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