

**DEPARTMENT OF TRANSPORTATION****Pipeline and Hazardous Materials  
Safety Administration****49 CFR Parts 173 and 180**

[Docket No. PHMSA-03-14405 (HM-220F)]

RIN 2137-AD78

**Hazardous Materials: Aluminum  
Cylinders Manufactured of Aluminum  
Alloy 6351-T6 Used in SCUBA, SCBA,  
and Oxygen Services—Revised  
Qualification and Use Criteria****AGENCY:** Pipeline and Hazardous  
Materials Safety Administration  
(PHMSA), DOT.**ACTION:** Final rule.

**SUMMARY:** This final rule revises the Hazardous Materials Regulations to address a known safety problem with cylinders manufactured of aluminum alloy 6351-T6. The revisions include an inspection and testing program for early detection of sustained load cracking on cylinders manufactured of aluminum alloy 6351-T6 and used in self-contained underwater breathing apparatus (SCUBA), self-contained breathing apparatus (SCBA), and oxygen services.

**DATES:** *Effective date:* January 1, 2007.**FOR FURTHER INFORMATION CONTACT:**

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**I. Background**

Cylinders made of aluminum alloy 6351-T6 are known to be susceptible to sustained load cracking (SLC) in the neck and shoulder area of the cylinder. While the exact cause and mechanism

of SLC are not yet fully understood, it appears the cracks primarily originate from the bottom of the neck of the cylinder, at or below the lowest thread position in the interior of the cylinder. The cracking was first brought to PHMSA's attention by persons retesting cylinders under the periodic retest procedures of § 180.209 of the Hazardous Materials Regulations (HMR; 49 CFR parts 171-180). The majority of SLC-related ruptures have occurred in self-contained underwater breathing apparatus (SCUBA), self-contained breathing apparatus (SCBA), and oxygen services. Since 1994, the Pipeline and Hazardous Materials Safety Administration (PHMSA, we) has been notified of thirteen suspected SLC ruptures of cylinders manufactured of aluminum alloy 6351-T6. Five of the thirteen ruptures resulted in serious injuries. Data from manufacturers show there are thousands of cylinders with small, non-leaking cracks, which are regularly detected during a diligent, detailed requalification process. Manufacturers of cylinders made from the 6351-T6 aluminum alloy have conducted research, testing, and analysis to determine whether there is any correlation between SLC and the probability of a cylinder rupture. The data indicate the cylinders may leak but not rupture when operated at marked service pressure. The data also indicate the probability of cracking increases with an increase in stress levels.

We performed additional metallurgical analysis on several ruptured cylinders to verify the cause of failure and failure mode. (See the metallurgical analysis reports at [http://hazmat.dot.gov/pubs/reports/cylinder/3al\\_cyls\\_info.htm](http://hazmat.dot.gov/pubs/reports/cylinder/3al_cyls_info.htm)). Those metallurgical analyses revealed SLC caused the cylinder ruptures, but the results were inconclusive as to why the cylinders abruptly ruptured instead of developing leaks. North American manufacturers discontinued using aluminum alloy 6351-T6 prior to 1990, replacing it with aluminum alloy 6061-T6, which is not susceptible to SLC. Cylinders manufactured of aluminum alloy 6351-T6 prior to 1990 include seamless aluminum cylinders marked "DOT 3AL;" and those marked with one of the following exemption or special permit numbers: 6498, 7042, 8107, 8364, and 8422. We estimate approximately 3.7 million U.S. cylinders manufactured from aluminum alloy 6351-T6 are currently in use in SCUBA, SCBA, and oxygen services.

On August 8, 2002, we published a final rule (67 FR 51626) amending the requirements of the HMR applicable to the maintenance, requalification, repair,

and use of DOT specification cylinders. On May 8, 2003, we issued a subsequent final rule (68 FR 24653) making further revisions in response to appeals. In these final rules, we added the following amendments pertaining to DOT specification cylinders made with aluminum alloy 6351-T6:

- Removed the authorization for the manufacture of DOT specification cylinders made with aluminum alloy 6351-T6 because cylinders manufactured with this aluminum alloy have a greater risk of failure than other aluminum cylinders.
- Prohibited the use of cylinders made with aluminum alloy 6351-T6 for the transportation of materials poisonous by inhalation in Hazard Zone A effective on October 1, 2002. After that date, cylinders made of aluminum alloy 6351-T6 may not be filled and offered for transportation in toxic inhalation hazard service.
- Prohibited the use of cylinders manufactured of aluminum alloy 6351-T6 for gases having pyrophoric properties.
- Required a visual inspection of DOT specification or exemption cylinders made of aluminum alloy 6351-T6 for evidence of SLC in the neck and shoulder area.

On September 10, 2003, the Research and Special Programs Administration, the predecessor agency to PHMSA, published an NPRM (68 FR 53314) proposing to amend HMR requirements applicable to aluminum cylinders manufactured using aluminum alloy 6351-T6. In the NPRM, for cylinders manufactured of aluminum alloy 6351-T6 used in SCUBA, SCBA, and oxygen service, we proposed the following amendments:

- A combined visual and eddy current examination at the time of requalification.
- A new Appendix C to Part 180, to specify the procedure to conduct the eddy current examination.
- Suitable safeguards to protect personnel and facilities should a cylinder fail during the filling process.

Although we believe the thirteen reported SLC ruptures under represent the extent of the SLC issue, we did not have sufficient data to determine whether the SLC-related ruptures extend beyond those services discussed above. Therefore, in the NPRM we requested additional information from manufacturers and users who were aware of a cylinder rupture, whether domestic or foreign, involving a DOT 3AL cylinder or any other cylinder manufactured from aluminum alloy 6351-T6. More broadly, we invited commenters to address the issue of

whether the new inspection requirements proposed in the NPRM should apply to cylinders manufactured of aluminum alloy 6351-T6 and used in services other than SCUBA, SCBA, or oxygen.

On October 26, 2005, based on comments received in response to the NPRM, we published an SNPRM (70 FR 61762) to revise the amendments originally proposed in the NPRM, expand the scope of the rulemaking, and propose additional requirements for DOT 3AL cylinders manufactured of aluminum alloy 6351-T6. In the SNPRM, we proposed to:

- Require a combined visual and eddy current examination at the time of requalification of DOT 3AL cylinders manufactured of aluminum alloy 6351-T6 and used in carbon dioxide service, in addition to those used in SCUBA, SCBA, and oxygen services.

- Impose a 40-year service life for cylinders manufactured of aluminum alloy 6351-T6 and used in SCUBA, SCBA, oxygen and carbon dioxide services.

- Add additional training requirements for persons performing the eddy current examination combined with a visual inspection.

- Modify procedures and recordkeeping requirements for eddy current examinations.

- Add a requirement to perform the initial eddy current examination combined with visual inspection for DOT 3AL cylinders manufactured of aluminum alloy 6351-T6 within three years of publication of a final rule in the **Federal Register**.

## II. Analysis of Comments

We received 10 comments from individuals and organizations, including cylinder manufacturers, representatives of the SCUBA and compressed gas industries, and eddy current test equipment manufacturers. The following companies, organizations, and individuals submitted comments: George Perez (Perez; RSPA-2003-14405-17); Matheson Tri Gas (Matheson; RSPA-2003-14405-18); Air Liquide Canada, Inc. (Air Liquide; RSPA-2003-14405-19); Engineered Inspection Systems (Engineered Inspection; RSPA-2003-14405-20); Western Sales & Testing of Deer Park, Inc. (Western Sales; RSPA-2003-14405-21, RSPA-2003-14405-22, RSPA-2003-14405-23, RSPA-2003-14405-24); Barlen and Associates, Inc. (Barlen; RSPA-2003-14405-25); Luxfer Gas Cylinders (Luxfer; RSPA-2003-14405-26); Brian H. Schumann (Schumann; RSPA-2003-14405-27); Compressed Gas Association (CGA; RSPA-2003-

14405-28); and, Amy Morgan Bruecks (Bruecks; RSPA-2003-14405-29). These comments are available in their entirety at the U.S. DOT Docket Management System Web site: <http://dms.dot.gov>, under Docket No. PHMSA-03-14405.

In this final rule, we summarize comments submitted to the docket, address concerns raised by commenters, and discuss our decisions on specific issues.

### A. Carbon Dioxide Service

The SNPRM proposed enhanced requalification requirements and a 40-year service life for DOT 3AL cylinders manufactured of aluminum alloy 6351-T6 and used in SCUBA, SCBA, oxygen, and carbon dioxide services. DOT 3AL cylinders used for carbon dioxide service were not included in the original NPRM, but were added to the SNPRM as a result of our own initiative and in response to comments submitted to the NPRM. Comments to the SNPRM are divided on the proposed scope of the rule. Several commenters [Bruecks; Engineered Inspection; Western Sales] recommend expanding the scope of the final rule to include "all cylinders manufactured of aluminum alloy 6351-T6" while others [CGA; Barlen] are opposed to expanding the scope beyond cylinders used in SCUBA, SCBA, and oxygen services.

Three commenters [Bruecks; Engineered Inspection; Western Sales] assert cylinders manufactured with aluminum alloy 6351-T6 are dangerous regardless of end use. One commenter [Western Sales] states, "[T]o simplify, and because I believe that this cylinder is just as dangerous when being used in services not addressed, I believe that any reference to just the 4 specific services be dropped. While I appreciate that there are no catastrophic failures from other user groups, that have been reported, I believe including all cylinders made of 6351-T6 is in the best interest of the cylinder industry and the general public." Each of the three commenters recommends amending proposed requirements to include "all" cylinders manufactured of aluminum alloy 6351-T6 in the scope of this rule.

We disagree. As previously stated, the majority of cylinder ruptures due to SLC have occurred in SCUBA, SCBA, and oxygen services. We believe these ruptures are directly related to the increased frequencies with which these cylinders are filled and their higher operating pressures. As discussed in the NPRM (68 FR 53314), the probability of SLC increases the more frequently the cylinder is filled. Additionally, cylinders used in SCUBA and SCBA services may be used by a diver or

firefighter, substantially increasing the risk of injury or fatality in the event of a cylinder rupture. To date, there have been no reported ruptures involving DOT 3AL cylinders manufactured of aluminum alloy 6351-T6 and used in carbon dioxide, fire extinguisher, or other industrial gas service. Therefore, we are not expanding the scope of the rule to include all DOT 3AL cylinders manufactured of aluminum alloy 6351-T6.

Two commenters [CGA; Barlen] to the SNPRM oppose expanding the scope of the rule to include cylinders used in carbon dioxide service. One commenter [CGA] states, "SLC is most likely to occur at high pressures. Because cylinders used in [carbon dioxide] service are operated at a lower pressure than those used in SCBA and SCUBA service, the rate of cracking for cylinders in [carbon dioxide] service will be substantially less than for those used in SCBA and SCUBA service. Failure by SLC is not expected to occur in cylinders used in [carbon dioxide] service."

A comment submitted by City Carbonic Sales Service [City Carbonic; RSPA-2003-14405-13] to the 2003 NPRM (68 FR 53314) asserts a significant number of cylinders used in carbon dioxide service were condemned due to SLC during a three-year in-house survey. However, a commenter [CGA] to the SNPRM disagrees with that assertion, suggesting it was unsubstantiated. The commenter [CGA] states the specific type of cracks observed in the condemned cylinders were not confirmed to be related to SLC, but were most likely due to the over-torquing of these cylinder's taper threaded valves causing cracks to occur in the neck of the cylinder. Two commenters [CGA; Barlen] suggest we are proposing to expand the scope of the rule without providing appropriate technical data to justify such an amendment. These commenters also assert SLC is not likely to develop in DOT 3AL cylinders used in carbon dioxide service and recommend we remove the proposed amendment to include these cylinders in the scope of this rule.

We agree. Therefore, in this final rule, we are removing the proposal expanding the scope of the rulemaking to include cylinders manufactured of aluminum alloy 6351-T6 and used in carbon dioxide service. We agree with the commenter's [CGA] statement that cylinders used in carbon dioxide service generally operate at lower pressures and, thus, have a reduced likelihood of developing SLC. Commenters are correct there have been no reported

cylinder ruptures involving DOT 3AL cylinders manufactured of aluminum alloy 6351-T6 and used in carbon dioxide, fire extinguisher, or other industrial gas services. However, we will continue to monitor these cylinders for evidence of SLC and, if the situation warrants, we may revisit this issue in a future rulemaking.

#### *B. 40-Year Service Life*

Currently, cylinders manufactured of aluminum alloy 6351-T6 may be used indefinitely so long as they conform to the requalification test and inspection criteria established in the HMR. The SNPRM proposed a 40-year service life from the date of manufacture for DOT 3AL cylinders manufactured of aluminum alloy 6351-T6 and used in SCUBA, SCBA, oxygen, and carbon dioxide services. Several commenters [CGA; Air Liquide; Barlen] to the SNPRM oppose the 40-year service life proposed for DOT 3AL cylinders manufactured of aluminum alloy 6351-T6. These commenters suggest there is no evidence these cylinders are more likely to be susceptible to SLC as they age and state the proposed amendment lacks the appropriate test data, analysis, or statistical data to support the implication that older cylinders are more likely to develop SLC. These commenters further suggest requalification is the most appropriate method to identify and condemn DOT specification cylinders regardless of their age.

After consideration of these comments, we agree our proposed 40-year service life for cylinders manufactured of aluminum alloy 6451-T6 and used in SCUBA, SCBA, carbon dioxide, and oxygen services is not warranted at this time. We also agree with the commenters' [CGA; Air Liquide; Barlen] statements that the requalification process is an effective method of condemning deteriorated or damaged DOT specification cylinders. Further, there is evidence these cylinders are being voluntarily removed from service as defects are identified through inspections and testing. Therefore, we are not adopting the 40-year service life in this final rule. We will continue to monitor cylinders manufactured of aluminum alloy 6351-T6 for evidence of SLC. If the situation warrants, we may revisit this issue in a future rulemaking.

#### *C. Requalification Schedule for Eddy Current Examinations*

Currently, the HMR specify periodic requalification requirements for DOT 3AL cylinders. Periodic requalification includes a volumetric expansion test

and visual examination at least once every five years. In the SNPRM, we proposed to require an initial eddy current examination to be performed within three years of the effective date of this final rule, and every 5 years thereafter. Commenters generally support the proposed eddy current examination for cylinders used in SCUBA, SCBA, oxygen and carbon dioxide services. However, several commenters [CGA; Barlen; Matheson; Engineered Inspection; Western Sales; Bruecks] assert the requirement to perform the initial eddy current examination within three years of the effective date of this final rule is unnecessary and may be difficult to comply with. These commenters point out requiring the eddy current examination within three years of the effective date may result in a large number of cylinders pulled from service for requalification twice within a five year period; once for the eddy current examination and once for the scheduled periodic requalification. Several commenters [Engineered Inspection; Western Sales; Bruecks] also assert the eddy current marking could cause confusion because it is required to be marked in association with the test date of the last volumetric expansion test, which could be different from the date of the eddy current examination. Additionally, one commenter [Matheson] is concerned the few companies currently equipped to conduct eddy current examinations may become overloaded with additional test work, resulting in backlogs and test delays. To alleviate confusion and reduce the overall burden, these commenters suggest revising the amendment to require eddy current examinations at the time of a cylinder's next scheduled periodic requalification, which is required every five years.

We agree. In this final rule, we are removing the proposal to perform an eddy current examination within three years of the effective date of this rule, and we are requiring an eddy current examination to be conducted at the cylinder's next required periodic requalification after January 1, 2007, the effective date of this final rule. As a result, the date stamp on each cylinder will accurately reflect the date of the last periodic requalification, including the eddy current and visual examination.

#### *D. Appendix C to Part 180*

In the SNPRM, we proposed to add a new Appendix C to part 180 to specify procedures, training, and recordkeeping requirements for performing the eddy current examination and visual

inspection of cylinders manufactured of aluminum alloy 6351-T6 and used in SCBA, SCUBA, oxygen and carbon dioxide services. Two commenters [CGA; Engineered Inspection] oppose the requirement to include the location and type of defect on the test report. These commenters assert this information is not necessary and increases the time required to document each examination. One commenter [Engineered Inspection] states, "details of this nature take much more time to note, and this will increase the amount of time required to perform a test. The end result will be an increased cost to the customer." Both commenters recommend removing this requirement since the pass/fail entry on the report is sufficient to indicate whether a defect was detected during the examination.

We agree. Since the eddy current with visual examination is conducted to locate SLC in the neck and shoulder of a cylinder, a pass/fail indication on the test report is sufficient for indicating whether a defect was found during the examination. Therefore, we are removing the proposal to notate the location and type of defect found on the test report.

One commenter [Western Sales] opposes the use of the term "rejected" in Appendix C to part 180 to describe cylinders failing the eddy current with visual examination. The commenter asserts the term "rejected" implies the cylinder can be repaired and returned to service. The commenter recommends removing the term "rejection" and replacing it with "condemned" to ensure the cylinder is not returned to service.

We agree. The terms "rejection criteria," and "rejected" in Appendix C to part 180 were intended to indicate cylinders failing the eddy current combined with visual examination must be permanently removed from service. We did not intend to allow those cylinders to be reconditioned or reused under any circumstances. The commenter is correct the term is inconsistent with § 180.205(i), which uses the terms "cylinder condemnation," and "condemned" to describe cylinders to be permanently removed from service. In this final rule, we are revising the terminology used in Appendix C to part 180 to be consistent with established requalification requirements.

A commenter [Western Sales] also points out the owners name and symbol may not be present (*i.e.* stamped on the cylinder). For this reason, the commenter recommends revising the language requiring a notation of the

cylinder owner's name or symbol to include the words "if present."

We agree. It is not necessary to record the owner's name or symbol if it is not present or available at the time of requalification. Therefore, in this final rule, we are revising the language to require requalification records to include the cylinder owner's name or symbol, if present. This revision is consistent with established cylinder requalification recordkeeping requirements.

One commenter [Western Sales] states the serial number must be included in the test report to readily identify the examined cylinder. We agree. We inadvertently omitted the cylinder serial number as a required notation on the test report. We are adding the serial number as information required to be included on the test report to identify cylinders that have been examined and tested.

In addition, we are revising the training requirements for persons who perform eddy current examinations to require an employer to certify they have been trained and tested in accordance with their company's specific eddy current and visual examination procedures. We are removing references to specific training criteria. It is the employer's responsibility to ensure each employee is properly trained in the functions he or she performs. The training requirements are consistent with those specified in § 172.704. Therefore, it is not necessary to list specific training criteria for persons who perform eddy current examinations.

Further, we are removing language from Appendix C to part 180, which required the visual examination to be conducted before and after the eddy current examination. After further review, we believe it is only necessary to conduct one visual inspection either before or after the eddy current examination. Cylinder requalifiers performing the visual examination prior to the eddy current examination may conduct a second visual examination afterwards to confirm the results of the eddy current examination, however, a second visual examination is not required.

#### *E. Operational Controls*

In the SNPRM, we proposed to add to the HMR operational controls as recommended safety practices for filling DOT 3AL cylinders manufactured of aluminum alloy 6351-T6. Two commenters [Barlen; Western Sales] oppose the proposed operational controls in the SNPRM. One commenter [Barlen] suggests it is inappropriate to require operational controls to be in

place during the filling process unless we intend to provide specific instructions on "how to fill" an aluminum alloy cylinder. Another commenter [Western Sales] suggests liability issues could arise from the proposed requirement for only one person to be around a cylinder during the filling operation.

We disagree. The operational controls proposed in the SNPRM are recommendations intended to emphasize persons filling DOT 3AL cylinders manufactured of aluminum alloy 6351-T6 should take additional safety precautions because of the risk of rupture during the filling process. The majority of cylinder ruptures due to SLC have occurred during the filling process. We do not believe the operational controls create potential liability issues because they are recommendations rather than mandatory requirements.

### **III. Section-by-Section Review**

#### *Part 173*

##### *Section 173.301*

This section establishes general requirements for the shipment of compressed gases in cylinders. Paragraph (d) of this section addresses the transportation of gases capable of combining chemically and prohibits the use of DOT 3AL cylinders for the transportation of pyrophoric gases. In this final rule, we are revising paragraph (d) to remove reference to DOT 3AL cylinders manufactured of aluminum alloy 6351-T6. The prohibition is relocated to a new paragraph (o) titled "DOT 3AL cylinders made of aluminum alloy 6351-T6."

##### *Section 173.302*

This section addresses requirements for filling cylinders with non-liquefied compressed gases. In this final rule, we are adding a new paragraph (e) to recommend operational controls during the filling process for cylinders manufactured of aluminum alloy 6351-T6 and used in SCUBA, SCBA, and oxygen services. The operational controls will reduce the risk of personal injury and property damage during the filling process.

#### *Part 180*

##### *Section 180.205*

This section establishes general requirements for the requalification of cylinders used to transport hazardous materials. Paragraph (f) sets forth requirements for periodic visual inspections of cylinders. Paragraph (f)(4) specifically requires cylinders manufactured of aluminum alloy 6351-

T6 to be inspected for evidence of SLC in the neck and shoulder areas. In this final rule, we are revising paragraph (f)(4) to reference part 180, Appendix C for requalification requirements for DOT 3AL cylinders manufactured of aluminum alloy 6351-T6 and used in SCUBA, SCBA, and oxygen services.

##### *Section 180.209*

This section establishes requirements for the requalification of DOT specification cylinders. Paragraph (a) of this section includes a table with the requalification criteria for DOT specification cylinders. In this final rule, we are amending the entry for the DOT 3AL cylinder in the "Requalification of Cylinders" table to add a reference to new paragraph (m). New paragraph (m) requires cylinders manufactured of aluminum alloy 6351-T6 and used in SCUBA, SCBA, and oxygen services to undergo an eddy current and visual examination for early detection of SLC in the neck and shoulder area of the cylinder. We are adding a footnote (3) to specify the eddy current and visual examinations do not apply to cylinders used for carbon dioxide, fire extinguisher or other industrial gas services.

##### *Section 180.213*

This section establishes marking requirements for cylinders passing periodic requalification testing. We are revising paragraph (d), which sets forth the specific markings required, and adding a new paragraph (f)(9) to specify the requalification marking requirements for aluminum cylinders successfully passing the combined eddy current examination and visual inspection.

#### *Appendix C to Part 180*

In this final rule, we are adding a new Appendix C to part 180 to specify procedures, training, and recordkeeping requirements for performing the eddy current examination and visual inspection of cylinders manufactured of aluminum alloy 6351-T6 and used in SCUBA, SCBA, and oxygen services. The new appendix includes:

- (1) Eddy current and visual examination and inspection procedures to identify SLC;
- (2) Eddy current equipment specifications and record retention requirements;
- (3) Cylinder condemnation criteria;
- (4) Record retention requirements for examinations and inspections; and,
- (5) Training requirements for personnel who perform eddy current and visual examinations and inspections.

#### IV. Regulatory Analyses and Notices

##### A. Statutory/Legal Authority for This Rulemaking

This final rule is published under authority of Federal hazardous materials transportation law (Federal hazmat law; 49 U.S.C. 5101 *et seq.*). Section 5103(b) of Federal hazmat law authorizes the Secretary of Transportation to prescribe regulations for the safe transportation, including security, of hazardous material in intrastate, interstate, and foreign commerce. To this end, as discussed in detail earlier in this preamble, the final rule proposes to revise current HMR requirements applicable to aluminum cylinders manufactured using aluminum alloy 6351-T6 and used in SCUBA, SCBA, and oxygen services. The purpose of the final rule is to adopt a standard for early detection of SLC to reduce the risk of a cylinder rupture and to establish a service life for cylinders manufactured of aluminum alloy 6351-T6 and used in SCUBA, SCBA, and oxygen services.

##### B. Executive Order 12866 and DOT Regulatory Policies and Procedures

This final rule is not considered a significant regulatory action under section 3(f) of Executive Order 12866 and, therefore, was not reviewed by the Office of Management and Budget. The final rule is not considered a significant rule under the Regulatory Policies and Procedures of the Department of Transportation [44 FR 11034].

The compliance costs associated with this rule are minimal. The regulatory analysis indicates the increased cost for performing an additional non-destructive examination (NDE) and implementing operational controls is small compared to the cost and safety risks of doing nothing; it is significantly less than the cost of immediately removing all cylinders from service. We estimate the cost of the hydrostatic test and internal visual inspection required under the current regulation to be \$5 per cylinder for each 5-year periodic requalification. We estimate the cost to conduct the additional visual inspection and eddy current testing required under this final rule combined with the current hydrostatic and visual inspection to be \$7.25 per cylinder for each periodic requalification. Therefore, we estimate the additional annual cost associated with this final rule to be \$0.45 per cylinder (\$2.25 additional requalification costs/5-year requalification period). A number of cylinder owners and retesters are voluntarily utilizing NDE as part of the 5-year requalification testing process for these cylinders. We estimate about 1

million of the total population of 3.7 million cylinders are already subject to enhanced inspection and testing requirements because of voluntary actions by cylinder owners and retesters. Further, annual costs to industry will diminish with time as cylinders are condemned or voluntarily removed from service. Over the next five years, we expect the population of cylinders manufactured of aluminum alloy 6351-T6 to decrease by 500,000, decreasing the number of cylinders not currently subject to voluntary NDE to 2.2 million.

Based on the foregoing analysis, we estimate initial annual costs to comply with the test and inspection requirements of this final rule to be \$1.215 million (2.7 million cylinders not currently subject to NDE  $\times$  \$.45 NDE test costs = \$1.215 million). Over a 5-year period, compliance costs will decrease to \$990,000 (2.2 million cylinders  $\times$  \$.45 NDE test costs). Thus, the total five year compliance cost to industry will be \$4.22 million.

The benefits of implementing the provisions of this final rule include avoided fatalities, injuries, and damages resulting from cylinder ruptures caused by SLC. The annual benefits associated with this final rule total \$1,183,125, or \$5.9 million over 5 years.

The cost-benefit analysis is based on information obtained from cylinder manufacturers, industrial gas companies, cylinder inspectors, and metallurgical evaluation of the ruptured cylinders. A regulatory analysis is available for review in the docket.

##### C. Executive Order 13132

This final rule has been analyzed in accordance with the principles and criteria contained in Executive Order 13132 ("Federalism"). This final rule preempts State, local and Indian tribe requirements, but does not adopt any regulation with direct effects on the States, the relationship between the national government and the States, or the distribution of power and responsibilities among the various levels of government. Therefore, the consultation and funding requirements of Executive Order 13132 do not apply.

The Federal hazardous materials transportation law, 49 U.S.C. 5101 *et seq.*, contains an express preemption provision (49 U.S.C. 5125(b)) preempting State, local, and Indian tribe requirements on certain covered subjects. Covered subjects are:

- (1) The designation, description, and classification of hazardous material;
- (2) The packing, repacking, handling, labeling, marking, and placarding of hazardous material;

(3) The preparation, execution, and use of shipping documents related to hazardous material and requirements related to the number, contents, and placement of those documents;

(4) The written notification, recording, and reporting of the unintentional release in transportation of hazardous material; and

(5) The design, manufacturing, fabricating, marking, maintenance, reconditioning, repairing, or testing of a packaging or container represented, marked, certified, or sold as qualified for use in transporting hazardous material.

This final rule covers items 2 and 5 and would preempt any State, local, or Indian tribe requirements not meeting the "substantively the same" standard.

Pursuant to § 5125(b)(2) of the Federal hazmat law, if the Secretary of Transportation issues a regulation concerning any of the covered subjects, the Secretary must determine and publish in the **Federal Register** the effective date of Federal preemption. The effective date may not be earlier than the 90th day following the date of issuance of the final rule and not later than two years after the date of issuance. PHMSA has determined the effective date of Federal preemption for these requirements will be one year from the date of publication of a final rule in the **Federal Register**.

##### D. Executive Order 13175

This final rule has been analyzed in accordance with the principles and criteria contained in Executive Order 13175 ("Consultation and Coordination with Indian Tribal Governments"). Because this final rule does not have tribal implications, does not impose substantial direct compliance costs, and is not required by statute, the funding and consultation requirements of Executive Order 13175 do not apply.

##### E. Regulatory Flexibility Act, Executive Order 13272, and DOT Regulatory Policies and Procedures

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires an agency to review regulations to assess their impact on small entities unless the agency determines a rule is not expected to have a significant economic impact on a substantial number of small entities. This rule imposes only minimal new costs of compliance on the regulated industry. Based on the assessment in the regulatory evaluation, I hereby certify that while this rule applies to a substantial number of small entities, there will not be a significant economic impact on those small entities. A



detailed Regulatory Flexibility analysis is available for review in the docket.

This final rule has been developed in accordance with Executive Order 13272 ("Proper Consideration of Small Entities in Agency Rulemaking") and DOT's policies and procedures to promote compliance with the Regulatory Flexibility Act to ensure potential impacts of draft rules on small entities are properly considered.

#### *F. Paperwork Reduction Act*

PHMSA currently has an approved information collection under OMB Control No. 2137-0022, Testing, Inspection, and Marking Requirements for Cylinders with 168,431 burden hours, and an expiration date of August 31, 2008. This final rule results in an increase in annual burden and costs based on a new information collection requirement. The amendments regarding the shipment of aluminum cylinders which resulted in a new information collection requirement were submitted to the Office of Management and Budget (OMB) for review and approval at the NPRM stage. At the request of OMB, we are re-submitting this new information collection burden request for final OMB approval at the final rule stage. Upon approval of this information collection by OMB, we will publish a separate notice in the **Federal Register**.

PHMSA has developed burden estimates to reflect changes in this final rule. PHMSA estimates the total information collection and recordkeeping burden would be as follows:

*OMB No. 2137-0022:*

*Total Annual Number of Responders:* 103,779.

*Total Annual Responses:* 168,879.

*Total Annual Burden Hours:* 271,461.

*Total Annual Burden Cost:* \$2,614,396.

*Total One-Time Start-Up Cost:* \$964,000.

Under the Paperwork Reduction Act of 1995, no person is required to respond to an information collection unless it has been approved by OMB and displays a valid OMB control number. Section 1320.8(d), Title 5, Code of Federal Regulations requires that PHMSA provide interested members of the public and affected agencies an opportunity to comment on information collection and recordkeeping requests. PHMSA specifically requested comments on the information collection and recordkeeping burdens associated with developing, implementing, and maintaining these requirements for approval under this final rule.

Direct your requests for a copy of the information collection to Deborah Boothe or T. Glenn Foster, Office of Hazardous Materials Standards (PHH-10), Pipeline and Hazardous Materials Safety Administration (PHMSA), Room 8102, 400 Seventh Street, SW., Washington, DC 20590-0001, Telephone (202) 366-8553. In addition, you may submit comments specifically related to the information collection burden to the PHMSA Desk Officer, OMB, at fax number 202-395-6974.

#### *G. Regulation Identifier Number (RIN)*

A regulation identifier number (RIN) is assigned to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The RIN number contained in the heading of this document can be used to cross-reference this action with the Unified Agenda.

#### *H. Unfunded Mandates Reform Act*

This final rule does not impose unfunded mandates under the Unfunded Mandates Reform Act of 1995. It does not result in costs of \$120.7 million or more to either State, local or tribal governments, in the aggregate, or to the private sector, and is the least burdensome alternative that achieves the objective of the rule.

#### *I. Environmental Assessment*

The National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. 4321-4347), requires Federal agencies to consider the consequences of major federal actions and prepare a detailed statement on actions significantly affecting the quality of the human environment. There are no significant environmental impacts associated with this final rule. PHMSA is amending requirements in the HMR pertaining to DOT 3AL aluminum cylinders. The purpose of this rulemaking initiative is to minimize personal injury during the filling process and to adopt a standard for early detection of sustained load cracking of cylinders manufactured of aluminum alloy 6351-T6 in order to reduce the risk of a cylinder rupture. Adopting a standard for early detection of sustained load cracking in order to reduce the risk of a cylinder rupture has no potential for environmental damage or contamination.

#### *J. Privacy Act*

Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the

comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (Volume 65, Number 70; Pages 19477-78) or you may visit <http://dms.dot.gov>.

#### **List of Subjects**

##### *49 CFR Part 173*

Hazardous materials transportation, Incorporation by reference, Packaging and containers, Radioactive materials, Reporting and recordkeeping requirements, Uranium.

##### *49 CFR Part 180*

Hazardous materials transportation, Incorporation by reference, Motor vehicle safety, Packaging and containers, Reporting and recordkeeping requirements.

■ In consideration of the foregoing, we are amending 49 CFR Chapter I, Subchapter C as follows:

#### **PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENT AND PACKAGES**

■ 1. The authority citation for part 173 continues to read as follows:

**Authority:** 49 U.S.C. 5101-5128, 44701; 49 CFR 1.45, 1.53.

■ 2. In § 173.301, paragraph (d) is revised and a new paragraph (o) is added to read as follows:

**§ 173.301 General requirements for shipment of compressed gases and other hazardous materials in cylinders, UN pressure receptacles and spherical pressure vessels.**

\* \* \* \* \*

(d) *Gases capable of combining chemically.* A filled cylinder may not contain any gas or material capable of combining chemically with the cylinder's contents or with the cylinder's material of construction, so as to endanger the cylinder's serviceability.

\* \* \* \* \*

(o) *DOT 3AL cylinders made of aluminum alloy 6351-T6.* A DOT 3AL cylinder manufactured of aluminum alloy 6351-T6 may not be filled and offered for transportation or transported with pyrophoric gases.

■ 3. In § 173.302, a new paragraph (e) is added to read as follows:

**§ 173.302 Filling of cylinders with nonliquefied (permanent) compressed gases.**

\* \* \* \* \*

(e) *DOT 3AL cylinders manufactured of 6351-T6 aluminum alloy.* Suitable safeguards should be provided to

protect personnel and facilities should failure occur while filling cylinders manufactured of aluminum alloy 6351-T6 used in self-contained underwater breathing apparatus (SCUBA), self-contained breathing apparatus (SCBA) or oxygen service. The cylinder filler should allow only those individuals essential to the filling process to be in the vicinity of the cylinder during the filling process.

#### PART 180—CONTINUING QUALIFICATION AND MAINTENANCE OF PACKAGINGS

■ 4. The authority citation for part 180 continues to read as follows:

**Authority:** 49 U.S.C. 5101–5128; 49 CFR 1.53.

■ 5. In § 180.205, paragraph (f)(4) is revised to read as follows:

#### § 180.205 General requirements for requalification of specification cylinders.

\* \* \* \* \*

(f) \* \* \*

(4) In addition to other requirements prescribed in this paragraph (f), each specification cylinder manufactured of aluminum alloy 6351-T6 and used in self-contained underwater breathing apparatus (SCUBA), self-contained breathing apparatus (SCBA), or oxygen service must be inspected for sustained

load cracking in accordance with Appendix C of this part at the first scheduled 5-year requalification period after January 1, 2007, and every five years thereafter.

\* \* \* \* \*

■ 6. In § 180.209, in paragraph (a), in the “Requalification of Cylinders table” the entry “DOT 3AL” is revised, and a new paragraph (m) is added to read as follows:

#### § 180.209 Requirements for requalification of specification cylinders.

\* \* \* \* \*

(a) \* \* \*

TABLE 1.—REQUALIFICATION OF CYLINDERS <sup>1</sup>

Specification under which cylinder was made	Minimum test pressure (psig.) <sup>2</sup>	Requalification period (years)
* * * * *	* * * * *	* * * * *
DOT 3AL .....	5/3 times service pressure .....	5 or 12 (see § 180.209(j) and § 180.209(m) <sup>3</sup> ).
* * * * *	* * * * *	* * * * *

<sup>1</sup> Any cylinder not exceeding 2 inches outside diameter and less than 2 feet in length is excepted from volumetric expansion test.

<sup>2</sup> For cylinders not marked with a service pressure, see § 173.301(e)(1) of this subchapter.

<sup>3</sup> This provision does not apply to cylinders used for carbon dioxide, fire extinguisher or other industrial gas service.

\* \* \* \* \*

(m) DOT-3AL cylinders manufactured of 6351-T6 aluminum alloy. In addition to the periodic requalification and marking described in § 180.205, each cylinder manufactured of aluminum alloy 6351-T6 used in self-contained underwater breathing apparatus

(SCUBA), self-contained breathing apparatus (SCBA), or oxygen service must be requalified and inspected for sustained load cracking in accordance with the non-destructive examination method described in the following table. Each cylinder with sustained load

cracking that has expanded into the neck threads must be condemned in accordance with § 180.205(i). This provision does not apply to cylinders used for carbon dioxide, fire extinguisher or other industrial gas service.

#### REQUALIFICATION AND INSPECTION OF DOT-3AL CYLINDERS MADE OF ALUMINUM ALLOY 6351-T6

Requalification requirement	Examination procedure <sup>1</sup>	Sustained Load Cracking Condemnation Criteria <sup>2</sup>	Requalification period (years)
Eddy current examination combined with visual inspection.	Eddy current—In accordance with Appendix C of this part. Visual inspection—In accordance with CGA Pamphlet C-6.1 (IBR; see § 171.7 of this subchapter).	Any crack in the neck or shoulder of 2 thread lengths or more.	5

<sup>1</sup> The requalifier performing eddy current must be familiar with the eddy current equipment and must standardize (calibrate) the system in accordance with the requirements provided in Appendix C to this part.

<sup>2</sup> The eddy current must be applied from the inside of the cylinder's neck to detect any sustained load cracking that has expanded into the neck threads.

■ 7. In § 180.213, paragraph (d) is revised and a new paragraph (f)(9) is added to read as follows:

#### § 180.213 Requalification markings.

\* \* \* \* \*

(d) *Requalification markings.* Each cylinder successfully passing requalification must be marked with the RIN set in a square pattern, between the month and year of the requalification date. The first character of the RIN must

appear in the upper left corner of the square pattern; the second in the upper right; the third in the lower right; and the fourth in the lower left. Example: A cylinder requalified in September 2006, and approved by a person who has been issued RIN “A123”, would be marked plainly and permanently into the metal of the cylinder in accordance with location requirements of the cylinder specification or on a metal plate permanently secured to the cylinder in

accordance with paragraph (b) of this section. An example of the markings prescribed in this paragraph (d) is as follows:

	A1	
9		06 X
	32	

Where:

“9” is the month of requalification

“A123” is the RIN

"06" is the year of requalification, and "X" represents the symbols described in paragraphs (f)(2) through (f)(9) of this section.

\* \* \* \* \*

(f) \* \* \*

(9) For designation of the eddy current examination combined with a visual inspection, the marking is as illustrated in paragraph (d) of this section, except the "X" is replaced with the letters "VE."

■ 8. In part 180, Appendix C is added to read as follows:

**Appendix C to Part 180—Eddy Current Examination With Visual Inspection for DOT 3AL Cylinders Manufactured of Aluminum Alloy 6351-T6**

1. *Examination Procedure.* Each facility performing eddy current examination with visual inspection must develop, update, and maintain a written examination procedure applicable to the test equipment it uses to perform eddy current examinations.

2. *Visual examinations.* Visual examinations of the neck and shoulder area of the cylinder must be conducted in accordance with CGA pamphlet C-6.1 (IBR; see § 171.7 of this subchapter).

3. *Eddy Current Equipment.* A reference ring and probe for each DOT-3AL cylinder manufactured of aluminum alloy 6351-T6 to be inspected must be available at the examination facility. Eddy current equipment must be capable of accurately detecting the notches on the standard reference ring.

4. *Eddy Current Reference Ring.* The reference ring must be produced to represent each cylinder to be tested. The reference ring must include artificial notches to simulate a neck crack. The size of the artificial notch (depth and length) must have a depth less than or equal to  $\frac{1}{8}$  of the wall thickness of the neck and a length greater than or equal to two threads. The standard reference must have a drawing that includes the diameter of the ring, and depth and length of each notch.

5. *Condemnation Criteria.* A cylinder must be condemned if the eddy current examination combined with visual examination reveals any crack in the neck or shoulder of 2 thread lengths or more.

6. *Examination equipment records.* Records of eddy current inspection equipment shall contain the following information:

(i) Equipment manufacturer, model number and serial number.

(ii) Probe description and unique identification (e.g., serial number, part number, etc.).

7. *Eddy current examination reporting and record retention requirements.* Daily records of eddy current examinations must be maintained by the person who performs the requalification until either the expiration of the requalification period or until the cylinder is again requalified, whichever occurs first. These records shall be made available for inspection by a representative of the Department on request. Eddy current examination records shall contain the following information:

(i) Specification of each standard reference ring used to perform the eddy current examination.

(ii) DOT specification or exemption number of the cylinder; manufacturer's name or symbol; owner's name or symbol, if present; serial number; and, date of manufacture.

(iii) Name of test operator performing the eddy current examination.

(iv) Date of eddy current examination.

(vi) Acceptance/condemnation results (e.g., pass or fail).

(vii) Retester identification number.

8. *Personnel Qualification Requirements.*

Each person who performs eddy current and visual examinations, and evaluates and certifies retest results must be certified by the employer that he/she has been properly trained and tested in the eddy current and visual examination procedures.

9. *Training Records.* A record of current training must be maintained for each employee who performs eddy current and visual examinations in accordance with § 172.704(d).

Issued in Washington, DC, on August 22, 2006, under authority delegated in 49 CFR part 1.

Thomas J. Barrett,

Administrator.

[FR Doc. E6-14255 Filed 8-28-06; 8:45 am]

BILLING CODE 4910-60-P

## DEPARTMENT OF TRANSPORTATION

### National Highway Traffic Safety Administration

#### 49 CFR Part 571

[Docket No. NHTSA-2005-21244]

RIN 2127-AJ59

### Federal Motor Vehicle Safety Standards; Occupant Crash Protection

**AGENCY:** National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).

**ACTION:** Final rule; delay of compliance date.

**SUMMARY:** Under the current version of Federal Motor Vehicle Safety Standard (FMVSS) No. 208, vehicles that are manufactured on or after September 1, 2006, are certified to the suppression requirements and have a child restraint anchorage system, commonly referred to as a Lower Anchors and Tethers for Children or "LATCH" system, in the right front passenger seating position must suppress the air bag for that position when a child restraint is installed at that position with the LATCH system. However, the standard does not yet specify detailed procedures for installing that type of child restraint in order to conduct the suppression test. In a notice of proposed rulemaking

(NPRM) published May 19, 2005, NHTSA proposed the needed installation procedures and proposed an effective date for the final rule following the NPRM. The agency anticipated in the NPRM that a final rule would be issued by September 1, 2006, that provided sufficient leadtime for vehicles to meet the suppression requirements with LATCH-equipped child restraints.

Because we have not completed our response to the comments to the NPRM, this final rule delays, for one year, the compliance date of the requirement for vehicles to meet the air bag suppression requirement with LATCH-equipped child restraints. This delay allows us additional time to publish our final action on the rulemaking.

**DATES:** The amendments made by this final rule are effective September 1, 2006. The compliance date for the requirement for vehicles to meet the air bag suppression requirements with LATCH-equipped child restraints is delayed until September 1, 2007.

*Petitions for reconsideration:* Petitions for reconsideration of this final rule must be received not later than October 13, 2006.

**ADDRESSES:** Petitions for reconsideration of this final rule must refer to the docket and notice number set forth above and be submitted to the Administrator, National Highway Traffic Safety Administration, 400 Seventh Street, SW., Washington, DC 20590, with a copy to Docket Management, Room PL-401, 400 Seventh Street, SW., Washington, DC 20590. Note that all comments received will be posted without change to <http://dms.dot.gov>, including any personal information provided. Please see the Privacy Act heading under Rulemaking Analyses and Notices.

*Docket:* For access to the docket to read background documents, go to <http://dms.dot.gov>, or to Room PL-401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal Holidays.

#### FOR FURTHER INFORMATION CONTACT:

Carla Cuentas, Office of Crashworthiness Standards, Light Duty Vehicle Division (telephone 202-366-1740, fax 202-493-2739); or Deirdre Fujita, Office of Chief Counsel (telephone 202-366-2992, fax 202-366-3820). Both of these officials can be reached at the National Highway Traffic Safety Administration, 400 Seventh St., SW., Washington, DC 20590.

#### SUPPLEMENTARY INFORMATION: