



THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

March 8, 2011

The Honorable John D. Rockefeller IV
Chairman, Committee on Commerce, Science,
and Transportation
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

Section 6(b)(2) of the Norman Y. Mineta Research and Special Programs Improvement Act (Pub. L. No. 108-426) requires the U.S. Department of Transportation (DOT) to submit an annual report concerning open safety recommendations from the National Transportation Safety Board and DOT Office of Inspector General addressing pipeline and hazardous materials safety. The enclosed report, "National Transportation Safety Board (NTSB) and DOT Office of the Inspector General (OIG): Open Safety Recommendations on Pipeline and Hazardous Materials Safety," fulfills that requirement.

With safety as our highest priority, the Department has aggressively sought closure of open NTSB and OIG pipeline and hazardous materials safety recommendations. As of this report, 38 NTSB recommendations and 6 OIG safety recommendations remain open. The Department will continue to work diligently with NTSB and OIG to close the open recommendations by exercising a variety of regulatory and nonregulatory approaches, within the timelines allowed, by technical assessment, notice and comment rulemaking, public comment, and due diligence.

A similar letter has been sent to the Ranking Member of the Senate Committee on Commerce, Science, and Transportation and the Chairmen and Ranking Members of the House Committees on Transportation and Infrastructure and Energy and Commerce.

Sincerely yours,


Ray L. Hood

Enclosure



THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

March 8, 2011

The Honorable Kay Bailey Hutchison
Ranking Member, Committee on Commerce,
Science, and Transportation
United States Senate
Washington, DC 20510

Dear Senator Hutchison:

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Ray LaHood

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Enclosure



THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

March 8, 2011

The Honorable John L. Mica
Chairman, Committee on Transportation
and Infrastructure
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

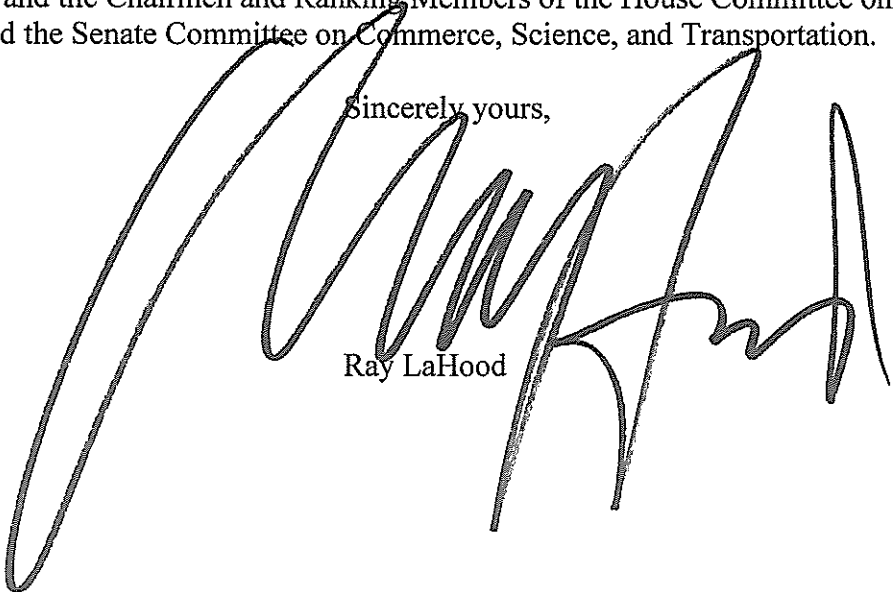
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THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

March 8, 2011

The Honorable Nick J. Rahall II
Ranking Member, Committee on Transportation
and Infrastructure
U.S. House of Representatives
Washington, DC 20515

Dear Congressman Rahall:

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Ray LaHood

Enclosure



THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

March 8, 2011

The Honorable Fred Upton
Chairman, Committee on Energy and Commerce
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

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Enclosure



THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

March 8, 2011

The Honorable Henry A. Waxman
Ranking Member, Committee on Energy
and Commerce
U.S. House of Representatives
Washington, DC 20515

Dear Congressman Waxman:

Section 6(b)(2) of the Norman Y. Mineta Research and Special Programs Improvement Act (Pub. L. No. 108-426) requires the U.S. Department of Transportation (DOT) to submit an annual report concerning open safety recommendations from the National Transportation Safety Board and DOT Office of Inspector General addressing pipeline and hazardous materials safety. The enclosed report, "National Transportation Safety Board (NTSB) and DOT Office of the Inspector General (OIG): Open Safety Recommendations on Pipeline and Hazardous Materials Safety," fulfills that requirement.

With safety as our highest priority, the Department has aggressively sought closure of open NTSB and OIG pipeline and hazardous materials safety recommendations. As of this report, 38 NTSB recommendations and 6 OIG safety recommendations remain open. The Department will continue to work diligently with NTSB and OIG to close the open recommendations by exercising a variety of regulatory and nonregulatory approaches, within the timelines allowed, by technical assessment, notice and comment rulemaking, public comment, and due diligence.

A similar letter has been sent to the Chairman of the House Committee on Energy and Commerce and the Chairmen and Ranking Members of the House Committee on Transportation and Infrastructure and the Senate Committee on Commerce, Science, and Transportation.

Sincerely yours,



Ray LaHood

Enclosure

**National Transportation Safety Board (NTSB)
and
DOT Office of Inspector General (OIG):**

**Open Safety Recommendations on
Pipeline and Hazardous Materials Safety**

A Report to Congress Required by Pub. L. No. 108-426

**U.S. Department of Transportation
January 2011**

National Transportation Safety Board (NTSB) and
DOT Office of Inspector General (OIG):
Open Safety Recommendations on Pipeline and Hazardous Materials Safety

January 2011

Executive Summary

The Norman Y. Mineta Research and Special Programs Improvement Act (Pub. L. No. 108-426) directs the Secretary of Transportation to submit a report on open National Transportation Safety Board (NTSB) and U.S. Department of Transportation (DOT) Office of Inspector General (OIG) recommendations concerning pipeline and hazardous materials safety. Specifically, the Act states:

Section 6(b)(2) NTSB AND INSPECTOR GENERAL RECOMMENDATIONS – Not later than January 1st of each year, the Secretary shall transmit to the Committee on Transportation and Infrastructure and the Committee on Energy and Commerce of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate a report containing each recommendation referred to in subsection (a)(2) and a copy of the Department of Transportation response to each such recommendation.

The Department has aggressively sought closure of open NTSB and OIG recommendations. Departmental agencies succeeded in receiving closure on 7 pipeline and 8 hazardous materials NTSB recommendations. The Department received 10 OIG hazardous materials recommendations in 2010 and closed 5 of those.

There are currently 38 open NTSB pipeline and hazardous materials safety recommendations assigned to DOT (see Appendix A for the status of NTSB recommendations; updates are highlighted). Copies of DOT responses to NTSB on open recommendations are included as required in the Mineta Act (see Appendix B).

There are currently 6 open OIG pipeline and hazardous materials safety recommendations (see Appendix C for the status of OIG recommendations; updates are highlighted). Copies of DOT responses to OIG on open recommendations are included as required in the Mineta Act (see Appendix D).

The DOT will continue to work diligently with NTSB and OIG to close the open recommendations, within the timelines allowed by technical assessment, rulemaking, public comment, due diligence, and other required administrative processes.

Report Structure

This report consists of an executive summary and four appendices:

- Appendix A: Status of Open NTSB Recommendations for Pipeline and Hazardous Materials Safety—This section summarizes the status of open NTSB recommendations assigned to DOT.
- Appendix B: Recent Responses to NTSB Recommendations—This section appends the most recent correspondence to NTSB on the status of open recommendations.
- Appendix C: Status of Open OIG Recommendations for Pipeline and Hazardous Materials Safety—This section summarizes the status of open OIG safety recommendations assigned to DOT.
- Appendix D: Responses to OIG Recommendations—This section appends the DOT response to OIG on open recommendations.

Report Contact

Questions about the contents of this report may be directed to:

Office of Governmental, International and Public Affairs
Pipeline and Hazardous Materials Safety Administration
U.S. Department of Transportation
1200 New Jersey Avenue SE (East Bldg.)
Washington, DC 20590
(202) 366-4831
(202) 366-7431 (fax)

**National Transportation Safety Board (NTSB)
and
DOT Office of Inspector General (OIG):**

**Open Safety Recommendations on
Pipeline and Hazardous Materials Safety**

**Appendix A:
Status of Open NTSB Recommendations for Pipeline
and Hazardous Materials Safety Assigned to DOT**

**U.S. Department of Transportation
January 2011**

Appendix A: Status of Open NTSB Recommendations for Pipeline and Hazardous Materials Safety Assigned to DOT

NTSB Rec. Number	Date Rec. Issued	Lead Agency	Recommendation/Action Needed	Current Status
PIPELINE SAFETY				
P-98-02	04/30/98	PHMSA	Determine the extent of the susceptibility to premature brittle-like cracking of older plastic piping that remains in use for gas service nationwide.	NTSB closed recommendation on February 3, 2010. (NTSB Classification: Closed - Acceptable Action)
P-99-12	06/01/99	PHMSA	Establish within 2 years scientifically based hours-of-service regulations that set limits on hours of service, provide predictable work and rest schedules, and consider circadian rhythms and human sleep and rest requirements.	NTSB closed recommendation on April 28, 2010. (NTSB Classification: Closed - Acceptable Alternative Action)
P-01-02	06/22/01	PHMSA	Require that excess flow valves be installed in all new and renewed gas service lines, regardless of a customer's classification, when the operating conditions are compatible with readily available valves.	The PHMSA issued a final rule on December 4, 2009. To fully address the scope of the NTSB recommendation, PHMSA is exploring issues associated with requiring the use of EFV's in service lines supplying other types of customers, such as apartments, commercial and industrial facilities. (NTSB Classification: Open - Acceptable Response)
P-04-01	07/01/04	PHMSA	Remove the exemption in 49 <i>Code of Federal Regulations</i> 192.65(b) that permits pipe to be placed in natural gas service after pressure testing when the pipe can not be verified to have been transported in accordance with the American Petroleum Institute's recommended practice RP 5L1.	In August 2009, the PHMSA submitted a report to the NTSB on cyclic fatigue in natural gas transmission pipelines and the unlikely presence of pre-November 12, 1970, line pipe in operators' inventories. The PHMSA also requested industry stakeholders conduct a survey of pipe in inventory. The survey results indicated the absence of vintage pipe in inventory. However, PHMSA believes it is still possible to have missed pipe. Therefore, PHMSA is removing the exemption that permits pipe to be placed in service when the pipe cannot be verified to have been transported in accordance with API RP 5L1. The PHMSA will include the removal of the exemption in a miscellaneous regulations update in 2011. The PHMSA sent an update to the NTSB on March 22, 2010. (NTSB Classification: Open - Acceptable Response)
P-04-02	07/01/04	PHMSA	Amend 49 <i>Code of Federal Regulations</i> to require that natural gas pipeline operators	The PHMSA incorporated the American Petroleum Institute's (API's) revised version of recommended practice RP 5LW by reference in a final rule published August 11, 2010. The PHMSA sent a letter to the NTSB on September 2, 2010, requesting the recommendation be

Appendix A: Status of Open NTSB Recommendations for Pipeline and Hazardous Materials Safety Assigned to DOT

P-04-03	07/01/04	PHMSA	(Part 192) and hazardous liquid pipeline operators (Part 195) follow the American Petroleum Institute's recommended practice RP 5LW for transportation of pipe on marine vessels. Evaluate the need for a truck transportation standard to prevent damage to pipe, and, if needed, develop the standard and incorporate it in 49 Code of Federal Regulations Parts 192 and 195 for both natural gas and hazardous liquid line pipe.	reclassified "Closed - Acceptable Action." (NTSB Classification: Open - Acceptable Response) The API 5L committee is currently working on revision to the 5LW standard. The new RP on truck transportation of line pipe is in the balloting process and the estimated date of ratification is by the end of 2010. The PHMSA will review and may incorporate by reference the newly developed RP through a proposed miscellaneous regulations update in 2011. (NTSB Classification: Open - Acceptable Response)
P-05-01	12/23/05	PHMSA	Require operators of hazardous liquid pipelines to follow the American Petroleum Institute's Recommended Practice 1165 for the use of graphics on the Supervisory Control and Data Acquisition screens.	NTSB closed recommendation on April 28, 2010. (NTSB Classification: Closed - Acceptable Action)
P-05-02	12/23/05	PHMSA	Require pipeline companies to have a policy for the review/audit of alarms.	NTSB closed recommendation on April 28, 2010. (NTSB Classification: Closed - Acceptable Action)
P-05-03	12/23/05	PHMSA	Require controller training to include simulator or non-computerized simulations for controller recognition of abnormal operating conditions, in particular, leak events.	NTSB closed recommendation on April 28, 2010. (NTSB Classification: Closed - Acceptable Action)
P-05-04	12/23/05	PHMSA	Change the liquid accident reporting form (PHMSA F 7000-1) and require operators to provide data related to controller fatigue.	NTSB closed recommendation on April 4, 2010. (NTSB Classification: Closed - Acceptable Action)
P-05-05	12/23/05	PHMSA	Require operators to install computer-based leak detection systems on all lines unless engineering analysis determines that such a system	NTSB closed recommendation on May 6, 2010. (NTSB Classification: Closed - Acceptable Alternative Action)

Appendix A: Status of Open NTSB Recommendations for Pipeline and Hazardous Materials Safety Assigned to DOT

P-07-07	5/25/07	PHMSA	is not necessary. Require in 49 <i>Code of Federal Regulations</i> 195.52 that a pipeline operator must have a procedure to calculate and provide a reasonable initial estimate of released product in the telephonic report to the National Response Center.	The PHMSA is proposing to modify the hazardous liquid operator telephonic notification regulation to require operators to have a procedure to calculate and provide a reasonable initial estimate of released product and maintain a record of the procedure used for reporting. The PHMSA published the final rule "Update to Pipeline and LNG Reporting" on November 26, 2010. The PHMSA sent a letter to the NTSB on December 8, 2010 requesting the recommendation be classified "Closed – Acceptable Action." (NTSB Classification: Open - Acceptable Response)
P-07-08	5/25/07	PHMSA	Require in 49 <i>Code of Federal Regulations</i> 195.52 that a pipeline operator must provide an additional telephonic report to the National Response Center if significant new information becomes available during the emergency response.	The PHMSA is proposing to modify the hazardous liquid operator telephonic notification regulation to require operators to have a procedure to calculate and provide a reasonable initial estimate of released product and maintain a record of the procedure used for reporting. The PHMSA published the final rule "Update to Pipeline and LNG Reporting" on November 26, 2010. The PHMSA sent a letter to the NTSB on December 8, 2010 requesting the recommendation be classified "Closed – Acceptable Action." (NTSB Classification: Open - Acceptable Response)
P-09-1	10/27/09	PHMSA	Conduct a comprehensive study to identify actions that can be implemented by pipeline operators to eliminate catastrophic longitudinal seam failures in electric resistance welded pipe (ERW); at a minimum, the study should include assessments of the effectiveness and effects of in-line inspection tools, hydrostatic pressure tests, and spike pressure tests; pipe material strength characteristics and failure mechanisms; the effects of aging on ERW pipelines; operational factors; and data collection and predictive analysis.	The PHMSA will prepare a study to research the state of technology in assessing defects and other anomalies in ERW pipe with a focus on low frequency ERW and Electric Fusion Welded pipe. The study will also review failure mechanisms. The project contract will be awarded in FY2011. The initial proposals submitted for the study were not approved by a panel reviewing the submissions. The PHMSA sent an update to the NTSB on September 1, 2010. (NTSB Classification: Open – Acceptable Response)
P-09-2	10/27/09	PHMSA	Based on the results of the study requested in Safety Recommendation P-09-1,	The PHMSA will review the results of the study committed to in P-09-01 and implement identified actions needed to assess seam defects and other anomalies and prevent catastrophic failures of ERW pipe. The PHMSA sent an update to the NTSB on September

Appendix A: Status of Open NTSB Recommendations for Pipeline and Hazardous Materials Safety Assigned to DOT

P-09-3	10/27/09	PHMSA	implement the actions needed. Initiate a program to evaluate pipeline operators' public education programs, including pipeline operators' self-evaluations of the effectiveness of their public education programs. Provide the National Transportation Safety Board with a timeline for implementation and completion of this evaluation.	1, 2010. (NTSB Classification: Open – Acceptable Response) The PHMSA will perform an analysis of the effectiveness of operator public awareness programs based on metrics under development. The PHMSA co-sponsored a public awareness workshop with the National Association of Pipeline Safety Representatives (NAPSR) on June 30, 2010, in Houston, Texas. Trade associations and pipeline operators shared lessons learned from implementing their public awareness programs. An ad-hoc team was formed to develop policy and guidance materials for upcoming inspections of pipeline operator public awareness programs. The PHMSA sent an update to the NTSB on September 1, 2010. (NTSB Classification: Open – Acceptable Response)
P-10-1	1/3/11	PHMSA	Through appropriate and expeditious means such as advisory bulletins and posting on your website, immediately inform the pipeline industry of the circumstances leading up to and the consequences of the September 9, 2010, pipeline rupture in San Bruno, California, and the National Transportation Safety Board's urgent safety recommendations to Pacific Gas and Electric Company so that pipeline operators can proactively implement corrective measures as appropriate for their pipeline systems.	This recommendation was sent to PHMSA on January 3, 2011. However, it was given a 2010 number and is therefore being reported in report as a 2010 item. An update will be provided in the January 2012 report. (NTSB Classification: Open, await response)
HAZARDOUS MATERIALS SAFETY				
R-89-48	07/14/89	FRA	The FRA and PHMSA amend 49 CFR Part 179 to require that closure fittings on hazardous	NTSB closed recommendation on March 19, 2010.
R-89-53		PHMSA		

Appendix A: Status of Open NTSB Recommendations for Pipeline and Hazardous Materials Safety Assigned to DOT

R-92-22 R-92-23	12/31/92	FRA PHMSA	<p>material rail tanks be designed to maintain their integrity in accidents that are typically survivable by the rail tank.</p> <p>The FRA and PHMSA develop and promulgate requirements for the periodic testing and inspection of rail tank cars that help to ensure the detection of cracks before they propagate to critical length by establishing inspection intervals that are based on the defect size detectable by the inspection method used, the stress level, and the crack propagation characteristics of the structural component (requirements based on a damage-tolerance approach).</p>	<p>(NTSB Classification: Closed - Unacceptable Action)</p> <p>The FRA sponsored two research projects resulting in two reports, "Tank Car Reliability Design and Analysis," and "Development and Application of Methodology for Reliability Assessment of Tank Car Structures: Phase I." Phase II of the technical study is currently under review.</p> <p>Additional studies with the Transportation Technology Center, Inc. are under way to support the derivation of the probability of detection curves and the application of these methods to tank car substructures. This is a collaborative effort with the tank car industry. To date, two reports have been published from this effort: "Railroad Tank Car Nondestructive Methods Evaluation" and "Quantitative Nondestructive Testing of Railroad Tank Cars Using the Probability of Detection Evaluation Approach."</p> <p>FRA R&D is working with industry to develop probability of detection (POD) curves for all DOT-authorized non-destructive evaluation methods. These curves will be used to correlate inspection methods with inspection intervals.</p> <p>FRA is currently working with PHMSA to incorporate Special Permit 12095 into the regulations. This Special Permit allows tank car owners to develop an inspection and maintenance plan for their fleet. The plan, including inspection methods and frequency, must be based on service reliability and evaluation of the plan's effectiveness at detecting defects.</p>
R-01-02 R-01-03	03/12/01	FRA PHMSA	<p>The FRA and PHMSA evaluate, with the assistance of the Association of American Railroads (AAR) and the Railway Progress Institute (RPI), the deterioration of pressure relief devices through normal service and then develop inspection criteria to ensure that the pressure relief devices remain functional between regular inspection intervals. Incorporate these inspection criteria into the U.S. Department of Transportation <i>Hazardous Materials</i></p>	<p>(NTSB Classification: Open - Acceptable Response)</p> <p>The AAR established a task force to review and evaluate inspection reports on pressure relief devices. The PHMSA, FRA, RPI, and Transport Canada participated on the task force. The task force collected more than 5,000 inspection reports on pressure relief devices.</p> <p>After the AAR Tank Car Committee completes its review of the data PHMSA and FRA will consider regulatory changes, as appropriate.</p> <p>In 2009-2010, FRA performed research to determine the effect of increasing the acceptance tolerance of relieve valve performance at the time of retest. The research was performed using the Analysis of Fire Effects on Tank Cars (AFFTAC) software which simulates pool or torch fire environments for specified tank cars. The research paper has been circulated among industry experts and is under final editing and review. Based on the results and methodologies of this research, FRA and PHMSA will evaluate development of in-service testing criteria for relief valves.</p> <p>(NTSB Classification: Open - Acceptable Response)</p>

Appendix A: Status of Open NTSB Recommendations for Pipeline and Hazardous Materials Safety Assigned to DOT

R-04-04	03/15/04	FRA	<p><i>Regulations.</i></p> <p>Conduct a comprehensive analysis to determine the impact resistance of the steels in the shells of pressure tank cars constructed before 1989. At a minimum, the safety analysis should include the results of dynamic fracture toughness tests and/or the results of nondestructive testing techniques that provide information on material ductility and fracture toughness. The data should come from samples of steel from the tank shells from original manufacturing or from a statistically representative sampling of the shells of the pre-1989 pressure tank car fleet.</p>	<p>NTSB closed recommendation on August 19, 2010.</p> <p>(NTSB Classification: Closed - Unacceptable Action)</p>
R-04-05	03/15/04	FRA	<p>Based on the results of the Federal Railroad Administration's comprehensive analysis to determine the impact resistance of the steel in the shells of pressure tank cars constructed before 1989, as addressed in Safety Recommendation R-04-4, establish a program to rank those cars according to their risk of catastrophic fracture and separation and implement measure to eliminate or mitigate this risk. This ranking should take into consideration operating temperatures, pressures, and maximum train speeds.</p>	<p>NTSB closed recommendation on August 19, 2010.</p> <p>(NTSB Classification: Closed - Unacceptable Action)</p>

Appendix A: Status of Open NTSB Recommendations for Pipeline and Hazardous Materials Safety Assigned to DOT

R-04-06	03/15/04	FRA	Validate the predictive model the Federal Railroad Administration is developing to quantify the maximum dynamic forces acting on railroad tank cars under accident conditions.	<p>The FRA, through the Volpe Center, worked over the last several years to validate its predictive model designed to quantify the maximum dynamic forces acting on railroad tank cars under accident conditions. The final research report prepared by Volpe was published.</p> <p>FRA will use that research to determine the appropriate course of action. Although FRA has successfully validated its predictive model FRA recognizes NTSB's concern that more technically rigorous models be developed and validated. As FRA pursues continued research and development on advanced tank car design, FRA will continue to further refine its quantification of the dynamic forces acting on railroad tank cars through additional modeling and, if appropriate, full-scale testing.</p> <p>(NTSB Classification: Open - Acceptable Response)</p> <p>Field testing was completed and the final research report prepared by Volpe was published.</p> <p>FRA, in conjunction with the ATCCRP, is sponsoring research to evaluate the puncture force of impactors having a variety of size and shapes. In addition, the research will look at the effect of different impact scenarios such as location and angle of impact. The results of the research will be used to develop a puncture resistance performance standard as well as a standard methodology which all designers will use to evaluate their tank car designs. This will allow for a consistent and objective evaluation of submitted designs.</p> <p>Additionally, industry also in conjunction with the ATCCRP is sponsoring research that will correlate steel properties to puncture resistance. This research will enable development of a battery of tests that will allow for the prediction of the behavior of particular steel in accident conditions. The improved constitutive relationships will increase the value of the simulation results. This research will begin early 2011.</p> <p>(NTSB Classification: Open - Acceptable Response)</p>
R-04-07	03/15/04	FRA	Develop and implement tank car design-specific fracture toughness standards, such as a minimum average Charpy value, for steels and other materials of construction for pressure tank cars used for the transportation of U. S. Department of Transportation class 2 hazardous materials, including those in "low temperature" service. The performance criteria must apply to the material orientation with the minimum impact resistance and take into account the entire range of operating temperatures of the tank car.	<p>The PHMSA conducted a review of serious incident data involving hazardous materials transported by highway and rail in quantities of greater than 3,000 liters during the five-year period from 2003 to 2007. We also conducted a qualitative comparative analysis of our proposed recommended practices to the causes summarized in the event descriptions of each serious incident to gauge whether application of proposed recommended practices may address the incident or enhanced safety of bulk loading and unloading operations.</p> <p>Our review of the data suggests that human error is the greatest single primary cause of accidents during, or resulting from, loading and unloading operations accounting for over half of the serious incidents. However, we also believe that a more detailed analysis of data specifically related to railroad tank car releases and FRA issued one time movement approvals related to railroad tank cars</p>
R-04-10	12/15/04	PHMSA	In cooperation with the Occupational Health and Safety Administration and the Environmental Protection Agency, develop regulations that require safe operating procedures to be established before hazardous materials are heated in a railroad tank car for unloading; at a minimum, the procedures should include the	<p>The PHMSA conducted a review of serious incident data involving hazardous materials transported by highway and rail in quantities of greater than 3,000 liters during the five-year period from 2003 to 2007. We also conducted a qualitative comparative analysis of our proposed recommended practices to the causes summarized in the event descriptions of each serious incident to gauge whether application of proposed recommended practices may address the incident or enhanced safety of bulk loading and unloading operations.</p> <p>Our review of the data suggests that human error is the greatest single primary cause of accidents during, or resulting from, loading and unloading operations accounting for over half of the serious incidents. However, we also believe that a more detailed analysis of data specifically related to railroad tank car releases and FRA issued one time movement approvals related to railroad tank cars</p>

Appendix A: Status of Open NTSB Recommendations for Pipeline and Hazardous Materials Safety Assigned to DOT

			monitoring of internal tank pressure and cargo temperature.	is necessary in order to understand the root causes of tank car related incidents. According, together with FRA, we intend to conduct a thorough analysis of the root causes of such incidents and develop a regulatory approach that focuses on those identified root causes. At the same time, we intend to continue to work with the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA), which each have numerous standards and regulations directly related to the loading and unloading of railroad tank cars.
R-05-16	12/12/05	FRA	The National Transportation Safety Board recommends that the Federal Railroad Administration: Require railroads to implement operating measures, such as positioning tank cars toward the rear of trains and reducing speeds through populated areas, to minimize impact forces from accidents and reduce the vulnerability of tank cars transporting chlorine, anhydrous ammonia, and other liquefied gases designated as poisonous by inhalation.	(NTSB Classification: Open - Unacceptable Response) NTSB closed recommendation on August 19, 2010. (NTSB Classification: Closed - Unacceptable Action)
R-05-17	12/12/05	FRA	The National Transportation Safety Board recommends that the Federal Railroad Administration: Determine the most effective methods of providing emergency escape breathing apparatus for all crewmembers on freight trains carrying hazardous materials that would pose an inhalation hazard in the event of unintentional release, and then require railroads to provide these breathing apparatus to their crewmembers along with appropriate training.	On October 16, 2008, the Rail Safety Improvement Act (RSIA) of 2008 was enacted. Section 413 of RSIA mandates that the Secretary of Transportation prescribe a rule by April 16, 2010, that would require, inter alia, that railroads provide certain emergency escape breathing apparatuses for all crewmembers in the locomotive cabs of freight trains carrying hazardous materials that pose an inhalation hazard. FRA issued an NPRM on October 5, 2010. (NTSB Classification: Open - Acceptable Response)
R-07-02	4/25/07	FRA	The FRA and PHMSA develop	Regulations require that information on the identity and location of hazardous materials shipments

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R-07-04	PHMSA	<p>regulations to require that railroads immediately provide to emergency responders accurate, real-time information regarding the identity and location of all hazardous materials on a train.</p>	<p>on a train be maintained for the benefit of emergency responders. However, with FRA's encouragement, the AAR issued a circular offering to provide hazardous materials information on the top 25 commodities to local emergency response organizations to assist in training and preparing for emergencies. The most current version of the circular is available on the AAR/Bureau of Explosives Web site at http://boe.aar.com/boe/download/circular_ot-55-j.pdf.</p> <p>In addition, with FRA's encouragement, CSX Transportation, Inc., and Chemtrec established a real-time information process that provides car content and train consist information on a "one-call" basis. FRA continues to evaluate this process to determine if additional regulations are necessary.</p> <p>NTSB has requested that FRA work with PHMSA to pursue the development and requirement of a national system that can electronically track tank car shipments of hazardous materials, and has classified the recommendation as "Open - Unacceptable Response," pending initiation of rulemaking efforts to implement it.</p> <p>(NTSB Classification: R-07-02 Open - Unacceptable Response; R-07-4 Open - Acceptable Response)</p>
R-07-05	PHMSA	<p>Require and verify that States and their communities that receive funds through the Hazardous Materials and Emergency Preparedness grant program conduct training exercises and drills with the joint participation of railroads and other transporters of hazardous materials operating within their jurisdictions as a means of evaluating State, regional, and local emergency hazardous materials response plans.</p>	<p>The PHMSA encourages states to utilize grant funding to help pay for community drills and exercises. HMEP grant funds are used to help fund emergency responders attendance at a Transportation Awareness and Emergency Response (TRANSCAER) whistle stop tour and safety train activities across the U.S.</p> <p>The PHMSA maintains close coordination with the emergency response community as a whole, working closely with the International Association of Fire Fighters, the National Association of SARA Title III Program Officers and the International Association of Fire Chief's Hazmat Subcommittee to ensure emergency problems are identified and resolved and to further explore methods to communicate hazards and identify exercise opportunities.</p> <p>The PHMSA sent a letter to the NTSB on November 17, 2010 requesting the recommendation classified "Closed - Acceptable Action."</p> <p>(NTSB Classification: Open - Acceptable Response)</p>
R-08-12 R-08-13	FRA PHMSA	<p>The FRA and PHMSA evaluate the risks posed to train crews by unit trains transporting hazardous materials, determine the optimum separation requirements between occupied locomotives and hazardous materials cars, and revise 49 <i>Code of Federal Regulations</i></p>	<p>PHMSA and FRA will perform a safety analysis that will either validate the current regulation or determine the optimum separation requirements between the crew and hazardous materials cars in unit trains used for transportation of hazardous materials.</p> <p>(NTSB Classification: Open - Acceptable Response)</p>

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H-92-1	03/20/92	PHMSA	<p>174.85 accordingly.</p> <p>Provide cargo tank manufacturers specific written guidance about (a) the factors and assumptions that must be considered when calculating the loads on cargo tank rollover protection devices in determining compliance with existing DOT performance standards; and (b) acceptable means to shield and protect the top-mounted closure fittings on all bulk liquid cargo tanks.</p>	<p>The PHMSA and FMCSA held three Cargo Tank Rollover Safety Summits. PHMSA, FMCSA and our industry partners will focus on driver training, driver awareness of the potential hazards and frequency of rollover incidents, and the use of electronic stability controls.</p> <p>The FMCSA, with the PHMSA and industry partners, produced an awareness video directed towards the hazardous materials cargo tank carrier industry. The video entitled, "Cargo Tank Rollover Prevention", was released August 3, 2010, and is available through the FMCSA website. The training video covers four approaches to reducing cargo tank truck rollovers: vehicle design and performance, load effects, highway factors and driver factors. The main focus, however, is on the driver, since statistically drivers are ten times more likely to be the cause of the rollover than any of the other factors.</p> <p>The PHMSA is working with the National Highway Traffic Safety Administration (NHTSA) to look at both loss-of-control and rollover accidents involving heavy trucks. The agencies will develop and produce a recommended agency position paper for Heavy Truck Stability Control. The NHTSA expects to publish an NPRM for heavy trucks in 2011.</p>
H-98-27	05/18/98	PHMSA	<p>The DOT prohibit the carrying of hazardous materials in external piping of cargo tanks, such as loading lines, that may be vulnerable to failure in an accident.</p>	<p>(NTSB Classification: Open - Acceptable Response)</p> <p>The PHMSA concluded an in-depth, comprehensive review of incident reports and other data and determined that a regulatory change to prohibit the transportation of flammable liquids in unprotected piping on cargo tanks is warranted. An NPRM is currently under review in OMB.</p> <p>(NTSB Classification: Open - Unacceptable Response)</p>
H-02-23	09/26/02	PHMSA	<p>Modify 49 Code of Federal Regulations 173.301 to clearly require that valves, piping, and fittings for cylinders that are horizontally mounted and used to transport hazardous materials are protected from multidirectional forces that are likely to occur during accidents, including rollovers.</p>	<p>NTSB closed recommendation on April 27, 2010.</p> <p>(NTSB Classification: Closed - Acceptable Action)</p>
H-02-24	09/26/02	PHMSA	<p>Require that cylinders that transport hazardous materials and are horizontally mounted on a semitrailer be protected from impact with the roadway or terrain to reduce the</p>	<p>NTSB closed recommendation on April 27, 2010.</p>

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H-04-23	07/01/04	PHMSA	<p>likelihood of their being fractured and ejected during a rollover accident.</p> <p>Require periodic nondestructive testing to be conducted on nurse tanks to identify material flaws that could develop and grow during a tank's service and result in a tank failure.</p>	<p>(NTSB Classification: Closed - Unacceptable Action)</p> <p>FMCSA commissioned a study through Virginia Tech (who will be using Iowa University) for nurse tank safety. Research is expected to be completed in 2011.</p> <p>The PHMSA initiated a rulemaking to incorporate into the HMR the provisions of a special permit that requires periodic inspection and testing for certain nurse tanks and is considering expanding the periodic test and inspection requirements to all nurse tanks. The PHMSA published an NPRM on July 21, 2010.</p>
H-09-01	03/05/09	PHMSA	<p>Modify 49 Code of Federal Regulations 173.301 to clearly require (1) that cylinders be securely mounted on mobile acetylene trailers and other trailers with manifolded cylinders to reduce the likelihood of cylinders being ejected during an accident and (2) that the cylinder valves, piping, and fittings be protected from multidirectional impact forces that are likely to occur during highway accidents, including rollovers.</p>	<p>(NTSB Classification: Open - Acceptable Response)</p> <p>The International Organization for Standardization (ISO) completed work on a standard covering the safety concerns pertaining to transportation of acetylene cylinders. PHMSA is working with the Compressed Gas Association (CGA) the RP for Mobile Acetylene Trailer Systems with an expected completion date of April 2011.</p>
H-09-02	03/05/09	PHMSA	<p>Require fail-safe equipment that ensures that operators of mobile acetylene trailers can perform unloading procedures only correctly and in sequence.</p>	<p>(NTSB Classification: Open - Acceptable Response)</p> <p>The International Organization for Standardization (ISO) completed work on a standard covering the safety concerns pertaining to transportation of acetylene cylinders. PHMSA is working with the Compressed Gas Association (CGA) to revise the RP for Mobile Acetylene Trailer Systems with an expected completion date of April 2011.</p>
A-07-104	12/17/07	PHMSA	<p>Require aircraft operators to implement measures to reduce the risk of primary lithium batteries becoming involved in fires on cargo-only aircraft, such as transporting such batteries in fire resistant containers and/or in restricted</p>	<p>(NTSB Classification: Open - Acceptable Response)</p> <p>The PHMSA initiated a rulemaking to comprehensively address the safe transportation of lithium cells and batteries. The intent of the rule is to strengthen the current regulatory framework by imposing more effective safeguards, including design testing to address risks related to internal short circuits, and enhanced packaging, hazard communication, and operational measures for various types and sizes of lithium batteries in specific transportation contexts. The NPRM "Hazardous Materials: Transportation of Lithium Batteries" was published on January 11, 2010.</p> <p>FAA and PHMSA continue to assess the value of packaging for lithium metal batteries. Based on</p>

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			<p>quantities at any single location on the aircraft.</p>	<p>the results of this assessment PHMSA is evaluating regulatory action to extend the lithium metal battery ban to cargo aircraft.</p> <p>PHMSA sent an update to the NTSB on October 13, 2010.</p> <p>(NTSB Classification: Open - Unacceptable Response)</p> <p>The PHMSA has initiated a rulemaking to comprehensively address the safe transportation of lithium cells and batteries. The intent of the rule is to strengthen the current regulatory framework by imposing more effective safeguards, including design testing to address risks related to internal short circuits, and enhanced packaging, hazard communication, and operational measures for various types and sizes of lithium batteries in specific transportation contexts. The NPRM "Hazardous Materials: Transportation of Lithium Batteries" was published on January 11, 2010.</p> <p>PHMSA published an NPRM "Hazardous Materials: Transportation of Lithium Batteries" on January 11, 2010. Since publication of the NPRM, the FAA has continued to study the fire behavior of lithium ion batteries, including the effectiveness of cargo compartment fire suppression systems, fire resistant containers and hand-held fire extinguishers.</p> <p>PHMSA sent a letter to the NTSB on October 13, 2010.</p> <p>(NTSB Classification: Open - Acceptable Response)</p> <p>NTSB closed recommendation on July 21, 2010.</p> <p>(NTSB Classification: Closed - Acceptable Action)</p>
A-07-105	12/17/07	PHMSA	<p>Until fire suppression systems are required on cargo-only aircraft, as asked for in Safety Recommendation A-07-99, require that cargo shipments of secondary batteries, including those contained in or packed with equipment, be transported in crew-accessible locations where portable fire suppression systems can be used.</p>	<p>PHMSA published an NPRM "Hazardous Materials: Transportation of Lithium Batteries" on January 11, 2010. Since publication of the NPRM, the FAA has continued to study the fire behavior of lithium ion batteries, including the effectiveness of cargo compartment fire suppression systems, fire resistant containers and hand-held fire extinguishers.</p> <p>PHMSA sent a letter to the NTSB on October 13, 2010.</p> <p>(NTSB Classification: Open - Unacceptable Response)</p> <p>NTSB closed recommendation on July 21, 2010.</p> <p>(NTSB Classification: Closed - Acceptable Action)</p>
A-07-106	12/17/07	PHMSA	<p>Require aircraft operators that transport hazardous materials to immediately provide consolidated and specific information about hazardous materials on board an aircraft, including proper shipping name, hazard class, quantity, number of packages, and location, to on-scene emergency responders upon notification of an accident or incident.</p>	<p>PHMSA published an NPRM "Hazardous Materials: Transportation of Lithium Batteries" on January 11, 2010. Since publication of the NPRM, the FAA has continued to study the fire behavior of lithium ion batteries, including the effectiveness of cargo compartment fire suppression systems, fire resistant containers and hand-held fire extinguishers.</p> <p>PHMSA sent a letter to the NTSB on October 13, 2010.</p> <p>(NTSB Classification: Open - Unacceptable Response)</p> <p>NTSB closed recommendation on July 21, 2010.</p> <p>(NTSB Classification: Closed - Acceptable Action)</p>
A-07-107	12/17/07	PHMSA	<p>Require commercial cargo and passenger operators to report to the Pipeline and Hazardous Materials Safety Administration all incidents involving primary and secondary lithium batteries,</p>	<p>On January 14, 2009, PHMSA published a final rule that imposed a comprehensive incident reporting requirement for batteries and battery-powered devices.</p> <p>The NPRM "Hazardous Materials: Transportation of Lithium Batteries" was published on January 11, 2010.</p> <p>PHMSA sent a letter to the NTSB on October 13, 2010 requesting the recommendation be classified</p>

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A-07-108	12/17/07	PHMSA	<p>including those contained in or packed with equipment, that occur either on board or during loading or unloading operations and retain the failed items for evaluation purposes.</p> <p>Analyze the causes of all thermal failures and fires involving secondary and primary lithium batteries and, based on this analysis, take appropriate action to mitigate any risks determined to be posed by transporting lithium batteries, including those contained in or packed with equipment, on board cargo and passenger aircraft as cargo; checked baggage; or carry-on items.</p>	<p>“Closed – Acceptable Action.” (NTSB Classification: Open - Unacceptable Response)</p> <p>The NPRM “Hazardous Materials: Transportation of Lithium Batteries” was published on January 11, 2010.</p> <p>PHMSA finalized an interagency agreement with the Department of Defense Naval Surface Warfare Center, Carderock Division, to perform compliance and risk assessment testing of lithium batteries in an effort to ensure manufacturer compliance and to further enhance risk reduction for the transportation of such batteries. A major component of this agreement includes testing and examination on lithium battery remnants and packaging that were involved in an incident and an analysis on probably cause of the incident.</p> <p>PHMSA sent a letter to the NTSB on October 13, 2010 requesting the recommendation be classified “Closed – Acceptable Action.”</p> <p>(NTSB Classification: Open - Unacceptable Response)</p> <p>The PHMSA has initiated a rulemaking to comprehensively address the safe transportation of lithium cells and batteries. The intent of the rule is to strengthen the current regulatory framework by imposing more effective safeguards, including design testing to address risks related to internal short circuits, and enhanced packaging, hazard communication, and operational measures for various types and sizes of lithium batteries in specific transportation contexts. The NPRM “Hazardous Materials: Transportation of Lithium Batteries” was published on January 11, 2010.</p> <p>(NTSB Classification: Open - Acceptable Response)</p>
A-07-109	12/17/07	PHMSA	<p>Eliminate regulatory exemptions for the packaging, marking, and labeling of cargo shipments of small secondary lithium batteries (no more than 8 grams equivalent lithium content) until the analysis of the failures and the implementation of risk-based requirements asked for in Safety Recommendation A-07-108 are completed.</p>	<p>(NTSB Classification: Open - Unacceptable Response)</p> <p>One of PHMSA’s most visible programs to promote battery safety is the SafeTravel Web site, which includes guidance and information on how to travel safely with batteries and battery-powered devices. PHMSA has also been working with the major airlines, travel and battery industries to provide SafeTravel information for ticketed passengers and frequent flyers, and place printed battery safety materials in seat pockets on passenger planes. We have recorded several million hits on our SafeTravel Web site. PHMSA continues to maintain and update the SafeTravel website as new information becomes available and is currently in the process of a major revision to the site. TSA includes SafeTravel information and links on its popular public website and FAA has issued Travel Tips and FAQs on Batteries Carried by Airline Passengers with a link to the SafeTravel website.</p>
A-08-1	01/07/08	FAA PHMSA	<p>In collaboration with air carriers, manufacturers of lithium batteries and electronic devices, air travel associations, and other appropriate government and private organizations, establish a process to ensure wider, highly visible, and continuous</p>	<p>One of PHMSA’s most visible programs to promote battery safety is the SafeTravel Web site, which includes guidance and information on how to travel safely with batteries and battery-powered devices. PHMSA has also been working with the major airlines, travel and battery industries to provide SafeTravel information for ticketed passengers and frequent flyers, and place printed battery safety materials in seat pockets on passenger planes. We have recorded several million hits on our SafeTravel Web site. PHMSA continues to maintain and update the SafeTravel website as new information becomes available and is currently in the process of a major revision to the site. TSA includes SafeTravel information and links on its popular public website and FAA has issued Travel Tips and FAQs on Batteries Carried by Airline Passengers with a link to the SafeTravel website.</p>

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		<p>dissemination of guidance and information to the air-traveling public, including flight crews, about the safe carriage of secondary (rechargeable) lithium batteries or electronic devices containing these batteries on board passenger aircraft.</p>	<p>PHMSA is working with FAA, the Air Transport Association and its member airlines, the Airline Pilots Association, and the Association of Flight Attendants (AFA) to raise flight crew awareness of measures they can take to avoid incidents as well as how to respond effectively should an incident occur in the cabin. Thousands of pilots and flight attendant personnel have been trained in how to appropriately respond to and mitigate a fire involving lithium batteries in a passenger aircraft cabin. Additionally, the ICAO Dangerous Goods Panel added the appropriate procedures to the ICAO Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (Red Book).</p> <p>FAA has developed videos instructing flight crews on how to address lithium battery fires. It has disseminated to airlines and pilots outreach on the safe carriage of lithium batteries as well as the latest research conducted on this issue by the FAA Technical Center. On a regular basis, FAA Special Agents conduct outreach to passengers and hand out information on the safe transportation of lithium batteries.</p> <p>PHMSA sent a letter to the NTSB on October 13, 2010 requesting the recommendation be classified "Closed – Acceptable Action."</p>
<p>A-08-2</p>	<p>01/07/08 FAA PHMSA</p>	<p>In collaboration with air carriers, manufacturers of lithium batteries and electronic devices, air travel associations, and other appropriate government and private organizations, establish a process to periodically measure the effectiveness of your efforts to educate the air-traveling public, including flight crews, about the safe carriage of secondary (rechargeable) lithium batteries or electronic devices containing these batteries on board passenger aircraft.</p>	<p>(NTSB Classification: Open - Acceptable Response)</p> <p>Through promulgation of a final rule, i.e., HM-215K, DOT recently amended the passenger notification provision in 49 C.F.R. Section 175.25, to require that an aircraft operator obtain passenger (or a person acting on a passenger's behalf) acknowledgement of the restrictions on hazardous materials prior to completion of a ticket purchase. This requirement, which will be effective on January 1, 2013, would ensure that the air-traveling public is educated about the general safety concerns of hazardous materials transportation on passenger aircraft. To measure effectiveness of this effort, we intend to collect and track available information on the number of reportable incidents and discrepancies involving the carriage of secondary (rechargeable) lithium batteries or electronic devices containing these batteries on board passenger aircraft on a year to year basis. Tracking these numbers following implementation of this amendment will allow us to measure the effectiveness of the effort to better educate the public on hazardous materials restrictions on passenger aircraft.</p> <p>We are continuing to evaluate the most effective means of educating flight crews on this danger.</p> <p>PHMSA sent a letter to the NTSB on October 13, 2010 requesting the recommendation be classified "Closed – Acceptable Action."</p>
<p>I-02-01</p>	<p>07/16/02 PHMSA</p>	<p>Develop, with the assistance of the Environmental Protection Agency (EPA) and Occupational Safety and</p>	<p>(NTSB Classification: Open - Acceptable Response)</p> <p>The PHMSA conducted a review of serious incident data involving hazardous materials transported by highway and rail in quantities of greater than 3,000 liters during the five-year period from 2003 to 2007. We also conducted a qualitative comparative analysis of our proposed recommended practices to the causes summarized in the event descriptions of each serious incident to gauge whether</p>

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I-02-02	07/16/02	PHMSA	<p>Health Administration (OSHA), safety requirements that apply to the loading and unloading of railroad tank cars, highway cargo tanks, and other bulk containers that address the inspection and maintenance of cargo transfer equipment, emergency shutdown measures, and personal protection requirements.</p> <p>Implement, after the adoption of safety requirements developed in response to Safety Recommendation I-02-01, an oversight program to ensure compliance with these requirements.</p>	<p>application of proposed recommended practices may address the incident or enhanced safety of bulk loading and unloading operations.</p> <p>The PHMSA review of the data suggests that human error is the greatest single primary cause of accidents during, or resulting from, loading and unloading operations, accounting for over half of the serious incidents. The general conclusion of the review is that the safety of bulk loading and unloading operations can be enhanced through the identification and implementation of measures targeted to reduce accidents resulting from human error. We have concluded that rulemaking action to address the safety issues we have identified is appropriate.</p> <p>The PHMSA initiated a rulemaking addressing bulk loading and unloading operations for highway cargo tanks and will continue to consult with EPA and OSHA. PHMSA expects to publish an NPRM in 2011.</p> <p>(NTSB Classification: Open - Unacceptable Response)</p> <p>The PHMSA conducted a review of serious incident data involving hazardous materials transported by highway and rail in quantities of greater than 3,000 liters during the five-year period from 2003 to 2007. We also conducted a qualitative comparative analysis of our proposed recommended practices to the causes summarized in the event descriptions of each serious incident to gauge whether application of proposed recommended practices may address the incident or enhanced safety of bulk loading and unloading operations.</p> <p>Our review of the data suggests that human error is the greatest single primary cause of accidents during, or resulting from, loading and unloading operations, accounting for over half of the serious incidents. The general conclusion of the review is that the safety of bulk loading and unloading operations can be enhanced through the identification and implementation of measures targeted to reduce accidents resulting from human error. We have concluded that rulemaking action to address the safety issues we have identified is appropriate.</p> <p>PHMSA expects to publish an NPRM in 2011.</p>
I-07-1	6/27/07	PHMSA	<p>Develop standards for the safe transportation of partially pressurized aluminum cylinders by, for example, requiring the addition of temperature-actuated pressure relief devices or the reduction of residual pressure to safe limits, to ensure that such</p>	<p>(NTSB Classification: Open - Unacceptable Response)</p> <p>The PHMSA continues to work with CGA to explore possible options for enhancing oxidizing and flammable gas cylinder survivability in various fire situations.</p> <p>(NTSB Classification: Open - Unacceptable Response)</p>

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I-07-2	6/27/07	PHMSA	<p>cylinders do not experience overpressure failure when exposed to a fire.</p> <p>Issue guidance to, at a minimum, the Fraternal Order of Police, International Association of Chiefs of Police, International Association of Fire Chiefs, International Association of Fire Fighters, National Association of State EMS Officials, National Sheriffs' Association, and National Volunteer Fire Council, describing the risk of overpressure failure of partially pressurized aluminum cylinders and the steps that should be taken to protect responders and the general public from a vehicle fire when aluminum cylinders are present.</p>	<p>The PHMSA continues to work with the emergency response community to develop and disseminate guidance and training material.</p> <p>(NTSB Classification: Open - Acceptable Response)</p>
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**National Transportation Safety Board (NTSB)
and
DOT Office of Inspector General (OIG):**

**Open Safety Recommendations on
Pipeline and Hazardous Materials Safety**

**Appendix B:
Recent Responses to NTSB Recommendations**

**U.S. Department of Transportation
January 2011**

Appendix B: Recent Responses to NTSB Recommendations

This Appendix includes the most recent communications to NTSB on open recommendations as required by the Norman Y. Mineta Research and Special Programs Improvement Act. This documentation reflects the current status of record; it does not include ongoing interim formal and informal communications between DOT and NTSB.

NTSB Rec. Number	Date Issued	Date of Most Recent Response	Documentation at Pages:
P-01-02	06/22/01	12/04/08	2-6
P-04-01	07/01/04	03/22/10	7
P-04-02	07/01/04	09/02/10	8
P-04-03	07/01/04	12/04/08	2-6
P-07-7	5/25/07	12/08/10	9-21
P-07-8	5/25/07	12/08/10	9-21
P-09-1	10/27/09	09/01/10	22-23
P-09-2	10/27/09	09/01/10	22-23
P-10-1	01/02/11	-	-
P-09-3	10/27/09	09/01/10	22-23
R-92-22	12/31/92	11/17/09	24-29
R-92-23	12/31/92	07/31/07	30-39
R-01-02	03/12/01	11/17/09	24-29
R-01-03	03/12/01	07/31/07	30-39
R-04-06	03/13/04	11/17/09	24-29
R-04-07	03/14/04	11/17/09	24-29
R-04-10	12/15/04	10/16/09	40-77
R-05-17	12/12/05	11/17/09	24-29
R-07-02	04/25/07	11/17/09	24-29
R-07-04	04/25/07	01/22/08	78-81
R-07-05	04/25/07	01/22/08	82-83
R-08-12	05/22/08	11/17/09	24-29
R-08-13	05/22/08	09/01/09	84-85
H-92-1	03/20/92	07/31/07	30-39
H-98-27	05/18/98	06/24/10	86-87
H-04-23	07/01/04	07/31/07	30-39
H-09-01	03/05/09	05/19/09	88-94
H-09-02	03/05/09	05/19/09	88-94
A-07-104	12/17/07	10/13/10	95-99
A-07-105	12/17/07	10/13/10	95-99
A-07-107	12/17/07	10/13/10	95-99
A-07-108	12/17/07	10/13/10	95-99
A-07-109	12/05/07	03/28/08	100-130
A-08-01	01/07/08	10/13/10	95-99
A-08-02	01/07/08	10/13/10	95-99
I-02-01	07/16/02	10/16/09	28-65
I-02-02	07/16/02	10/16/09	28-65
I-07-01	06/27/07	01/22/08	131-135
I-07-02	06/27/07	01/22/08	131-135

Appendix B



U.S. Department
of Transportation
Pipeline and Hazardous
Materials Safety
Administration

1200 New Jersey Avenue, SE
Washington, D.C. 20590

DEC - 4 2008

The Honorable Mark V. Rosenker
Acting Chairman
National Transportation Safety Board
490 L'Enfant Plaza East, S.W.
Washington, DC 20594

Dear Chairman Rosenker:

This letter provides a high level update on open pipeline safety recommendations issued by the National Transportation Safety Board (NTSB) to the Pipeline and Hazardous Materials Safety Administration (PHMSA). We take our responsibilities to the NTSB seriously and, as we hope this letter documents, we are making good progress on implementing the Board's recommendations. Our senior staff met with your staff on October 30 to provide a more detailed review of our progress. Recently PHMSA requested closure on open safety recommendations P-05-05 and P-07-09. For that reason updates on those two recommendations are not included in this letter.

P-98-02

Safety recommendation P-98-02 asked that PHMSA determine the extent of susceptibility to premature brittle-like cracking of older plastic piping that remains in use for gas service nationwide. The Plastic Pipe Database Committee, which includes representatives from PHMSA, NTSB, American Gas Association, American Public Gas Association, Plastics Pipe Institute, Gas Research Institute, industry, and State regulators, recently completed collecting data and preparing a table for in-service plastic piping material failures. The data collected from 2001 to present, on the Nation's natural gas distribution systems includes both actual failure information and negative reports submitted voluntarily by participating pipeline operating companies. The data indicates the susceptibility of additional specific materials to brittle-like cracking.

Based on the findings, on September 6, 2007, PHMSA issued an updated notification of the susceptibility of premature brittle-like cracking of vintage plastic pipe. Additionally, our Gas Distribution Integrity Management Program Report found need for the American Society for Testing and Materials (ASTM) to consider enhancing performance testing for plastic pipe fittings. ASTM is currently addressing these issues. Further, PHMSA has also gone beyond the recommendation and is considering requiring operators to report by telephone or through PHMSA's website suspect older plastic pipe resulting from failure as part of a distribution integrity management program. We issued an NPRM "Pipeline Safety: Integrity Management

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Program for Gas Distribution Pipelines” on June 25, 2008, and hope to finalize this rulemaking by summer 2009.

P-99-12

Safety recommendation P-99-12 asked that PHMSA address fatigue issues for pipeline dispatchers and operators (also known as controllers). It specifically calls upon PHMSA to establish scientifically based hours-of-service regulations for pipeline controllers with limits, provide predictable work and rest schedules, and consider circadian rhythms and human sleep rest requirements.

In a January 2007 report to the Congress on the Controller Certification Project, PHMSA identified shift length, schedule rotation, and education in fatigue mitigation strategies as fruitful elements in a control room risk program that would address fatigue. The Pipeline Inspection, Protection, Enforcement, and Safety Act of 2006 (PIPES Act) requires regulations for each operator of a gas or hazardous liquid pipeline to develop a plan, subject to PHMSA review, to reduce pipeline system risk associated with human factors, including fatigue. The Act also requires PHMSA to amend its forms for operators to report gas and hazardous liquid pipeline accidents. A Federal Register notice seeking approval for additional Information Collection request published September 4, 2008. Information Collection forms will be effective January 2009.

PHMSA held a workshop on May 23, 2007 that addressed best practices in this area and developed a regulatory proposal for Control Room Management. PHMSA issued a Notice of Proposed Rulemaking (NPRM) “Pipeline Safety: Control Room Management/Human Factors” on September 12, 2008. PHMSA anticipates publishing a final rule in the summer of 2009.

P-01-02

Safety recommendation P-01-02 asked that PHMSA require that excess flow valves be installed in all new and renewed gas service lines, regardless of a customer's classification, when the operating conditions are compatible with readily available valves. The PIPES Act requires PHMSA to prescribe minimum distribution integrity management standards by December 31, 2007. The Act also includes a requirement for gas distribution operators to install excess flow valves (EFVs) on lines serving single-family residences installed or entirely replaced beginning June 1, 2008. This is one of PHMSA's highest regulatory priorities.

PHMSA issued an NPRM “Pipeline Safety: Integrity Management Program for Gas Distribution Pipelines” on June 25, 2008. As noted above, we hope to finalize this rule by summer 2009. This notice includes mandatory installation of EFVs on new or replaced service lines on single residences as specified by the PIPES Act and recommended by the NTSB. The PHMSA Administrator requested cooperation from State Commissioners in reminding operators of their responsibilities under the statute to begin installing EFVs on June 1, 2008. State pipeline safety agencies, which oversee most distribution operators, have been actively encouraging operators to

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begin these installations for some time. In addition, PHMSA issued an Advisory Bulletin on June 5, 2008, advising operators of the statutory requirement to install EFVs on service lines.

P-04-01

Safety recommendation P-04-01 asked that PHMSA remove the exemption in regulations that permits pipe to be placed in natural gas service after pressure testing when the pipe cannot be verified to have been transported in accordance with the American Petroleum Institute's (API) recommended practice RP5L1.

PHMSA anticipates requesting the NTSB to rescind this recommendation based on information PHMSA gathered on cyclic fatigue in natural gas transmission pipelines and the unlikely presence of pre-November 12, 1970 line pipe in operators' inventories. A report articulating this position will be prepared for submission to the NTSB in December 2008.

P-04-02

Safety recommendation P-04-02 asked that PHMSA amend regulations to require that natural gas pipeline operators and hazardous liquid operators follow API-recommended practice for transportation of pipe on marine vessels. PHMSA intends to incorporate the American Petroleum Institute's (API's) revised version of RP 5LW by reference in a miscellaneous rulemaking update once API completes the standard. The standard is expected to be completed by the end of 2008 and would at that time be considered for incorporation into our code through rulemaking.

P-04-03

Safety recommendation P-04-03 asked that PHMSA evaluate the need for a truck transportation standard to prevent damage to pipe and, if needed, develop the standard and incorporate it into regulations for both natural gas and hazardous liquid line pipe. PHMSA closely monitored progress and the results of research sponsored by Pipeline Research Council International (PRCI) on truck transportation of pipe. We are satisfied with the approach of research, which indicated no known examples of truck transportation related fatigue failures. The research also indicated that dynamic stresses induced on pipe transported by truck are up to two times greater than vibrations from transporting by rail.

The API 5L committee is developing a recommended practice (RP) for truck transportation of steel line pipe in follow up to the final PRCI report investigating transportation related fatigue. The RP is anticipated to be completed by the first quarter of 2009 and PHMSA intends to incorporate by reference the newly developed RP through a miscellaneous regulations update in the fourth quarter of 2009.

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P-05-01

Safety recommendation P-05-01 asked that PHMSA require operators of hazardous liquid pipelines to follow the American Petroleum Institute's Recommended Practice 1165 for the use of graphics on the Supervisory Control and Data Acquisition (SCADA) screens. In January 2007, PHMSA submitted a report to the Congress on the project that identified several areas for enhancing safety including improved graphics on SCADA screens, alarms, and training. On May 23, 2007, PHMSA held a public workshop that addressed best practices in addressing fatigue, man-machine interface, and qualifications and training. The PIPES Act requires PHMSA to issue regulations requiring operators to use the API's RP 1165.

PHMSA issued an NPRM "Pipeline Safety: Control Room Management/Human Factors" on September 12, 2008. The NPRM addresses both the congressional direction and the NTSB recommendations on the use of graphics, review of alarms, controller training, and controller fatigue. PHMSA anticipates publishing a final rule in the summer of 2009.

P-05-02

Safety recommendation P-05-02 asked that PHMSA require pipeline companies to have a policy for the review/audit of alarms.

In January 2007, PHMSA submitted a report to the Congress on the project that identified several areas for enhancing safety including improved graphics on SCADA screens, alarms, and training. On May 23, 2007, PHMSA held a public workshop that addressed best practices in addressing fatigue, man-machine interface, and qualifications and training. The PIPES Act requires PHMSA to issue regulations requiring operators to review and audit alarm systems.

PHMSA issued an NPRM "Pipeline Safety: Control Room Management/Human Factors" on September 12, 2008. The NPRM address both the congressional direction and the NTSB recommendations on use of graphics, review of alarms, controller training, and controller fatigue. PHMSA anticipates publishing a final rule in the summer of 2009.

P-05-03

Safety recommendation P-05-03 asked that PHMSA require controller training to include simulator or non-computerized simulations for controller recognition of abnormal operating conditions, in particular, leak events.

In January 2007, PHMSA submitted a report to the Congress on the project that identified several areas for enhancing safety including improved graphics on SCADA screens, alarms, and training. PHMSA held a public workshop on May 23, 2007 that addressed best practices in addressing fatigue, man-machine interface, and qualifications and training. The PIPES Act requires PHMSA to issue regulations by June 1, 2008, requiring operators to review and audit alarm systems.

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PHMSA issued an NPRM "Pipeline Safety: Control Room Management/Human Factors" on September 12, 2008. The NPRM address both the congressional direction and the NTSB recommendations on use of graphics, review of alarms, controller training, and controller fatigue. PHMSA anticipates publishing a final rule in the summer of 2009.

P-05-04

Safety recommendation P-05-04 asked that PHMSA change the liquid accident reporting form (PHMSA F 7000-1) and require operators to provide data related to controller fatigue. PHMSA agrees with this recommendation and has developed a draft accident form that was reviewed by industry and State pipeline partners. PHMSA published the draft form for comment on September 4, 2008 and anticipates having the new form in place in early 2009.

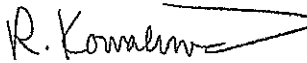
P-07-07 and 08

Safety recommendation P-07-07 asked that PHMSA require (in 49 CFR 195.52) that a pipeline operator must have a procedure to calculate and provide a reasonable initial estimate of released product in the telephonic report to the National Response Center. Safety recommendation P-07-08 asked that PHMSA require (in 49 CFR 195.52) that a pipeline operator must provide an additional telephonic report to the National Response Center if significant new information becomes available during the emergency response.

PHMSA is modifying the hazardous liquid operator telephonic notification regulation to require operators to have a procedure to calculate and provide a reasonable initial estimate of released product and maintain a record of the procedure used. We are also modifying the regulation to require operators to provide an additional telephonic report to the National Response Center if significant new information becomes available during the emergency response phase. The National Response Center will give these telephonic updates a new report number and if available will provide reference to the old report number for tracking purposes. PHMSA anticipates having the rule out for public comment in December 2008.

PHMSA continues to work aggressively to close all open recommendations issued by the NTSB. If you, or your staff, have any questions, please feel free to contact me at 202-366-4433.

Respectfully,



Rick Kowalewski
Acting Assistant Administrator/
Chief Safety Officer

Appendix B



U.S. Department
of Transportation
**Pipeline and Hazardous
Materials Safety
Administration**

Administrator

1200 New Jersey Ave., S.E.
Washington, DC 20599

MAR 22 2010

The Honorable Deborah A.P. Hersman
Chairman
National Transportation Safety Board
490 L'Enfant Plaza East, SW
Washington, DC 20594

Dear Chairman Hersman:

I am sending you this letter as a follow up to a letter the Pipeline and Hazardous Materials Safety Administration (PHMSA) sent to the National Transportation Safety Board (NTSB) dated August 10, 2009 on pipeline safety recommendation P-04-1. The NTSB issued this recommendation as a result of the accident investigation of an Enbridge pipeline rupture near Cohasset, Minnesota and recommended PHMSA *"Remove the exemption in 49 Code of Federal Regulations 192.65 (b) that permits pipe to be placed in natural gas service after pressure testing when the pipe can not be verified to have been transported in accordance with the American Petroleum Institute's (API) recommended practice RP 5L1."*

In the letter mentioned above, PHMSA provided NTSB with a copy of our technical report on the risk of natural gas pipeline failure from the pressure-cycle-induced growth of original manufacturing-related or transportation-related defects. In addition to the technical report, PHMSA requested industry stakeholders to conduct a survey of pipe in inventory. Informal surveys by the Interstate Natural Gas Association of America of natural gas transmission operators and by API of pipe mills found no vintage pipe covered by 49 CFR § 192.65 (b).

Although the survey results are a promising indicator of the absence of vintage pipe in inventory, PHMSA believes it was still possible to have missed pipe. Therefore, we are removing the exemption in 49 CFR § 192.65 (b) that permits pipe to be placed in service when the pipe cannot be verified to have been transported in accordance with API RP 5L1. The exemption will be removed in an upcoming Miscellaneous Rulemaking that we anticipate to publish for public comment by October 2010 and adopt in 2011.

We will provide your staff additional information on the rulemaking, including notices published in the Federal Register, as soon as it is available.

If you have questions, please feel free to contact me at 202-366-4433.

Regards,

Cynthia L. Quarterman

Appendix B



U.S. Department
of Transportation
**Pipeline and Hazardous
Materials Safety
Administration**

Administrator

1200 New Jersey Ave., S.E.
Washington, DC 20590

SEP - 2 2010

The Honorable Deborah A.P. Hersman
Chairman
National Transportation Safety Board
490 L'Enfant Plaza East, SW
Washington, DC 20594

Dear Chairman Hersman:

I am sending you this letter in response to the National Transportation Safety Board's (NTSB) safety recommendation P-04-2 issued to the Pipeline and Hazardous Materials Safety Administration (PHMSA) on July 1, 2004 (formerly the Research and Special Programs Administration - RSPA). The NTSB issued this recommendation as a result of the July 4, 2002 incident in Cohasset, Minnesota, recommending PHMSA "Amend 49 Code of Federal Regulations to require that natural gas pipeline operators (Part 192) and hazardous liquid pipeline operators (Part 195) follow the American Petroleum Institute's (API) recommended practice RP 5LW for transportation of pipe on marine vessels".

A publication to the August 11, 2010 Federal Register entitled, "Pipeline Safety: Periodic Updates of Regulatory References to Technical Standards and Miscellaneous Edits" adds language to the pipeline safety regulations which addresses this recommendation. API Recommended Practice 5LW (2nd edition 1996) will be newly incorporated by reference within Parts 192 and 195. Additionally, 5LW will be referenced in §192.65 (a) and newly created §195.207 (a). API RP 5LW provides a standard for transportation of certain API Specification 5L steel line pipe by ship or barge on both inland and marine waterways. The effective date of the final rule containing these updates is October 1, 2010. The Federal Register Notice containing these updates is available here:

<http://frwebgate2.access.gpo.gov/cgi-bin/PDFgate.cgi?WAISdocID=nvQTVx/1/2/0&WAIAction=retrieve>

As this rulemaking addresses the recommendation made by the NTSB, PHMSA requests the NTSB classify Safety Recommendation P-04-2 as "Closed-Acceptable Action."

If you have questions, please feel free to contact me at 202-366-4433.

Regards,

Cynthia L. Quarterman

Appendix B



U.S. Department
of Transportation
Pipeline and Hazardous Materials
Safety Administration

1200 New Jersey Ave., SE
Washington, DC 20590

DEC - 8 2010

The Honorable Deborah A. P. Hersman
Chairman
National Transportation Safety Board
490 L'Enfant Plaza, SW
Washington, DC 20594

Dear Chairman Hersman:

I am sending you this letter in response to the National Transportation Safety Board's (NTSB) safety recommendations P-07-7 and P-07-8 issued to the Pipeline and Hazardous Materials Safety Administration (PHMSA) on June 25, 2007 in response to the NTSB's investigation of an October 27, 2004 hazardous liquid pipeline rupture that occurred near Kingman, Kansas. The NTSB recommended that PHMSA require an operator to have a procedure to calculate and provide a reasonable initial estimate of release product in the telephonic report to the National Response Center (NRC) (P-07-7) and require an operator to provide an additional telephonic report to the NRC if significant new information becomes available during the emergency response (P-07-8).

PHMSA issued a Notice of Proposed Rulemaking (Federal Register /Vol. 74, No. 126 Thursday, July 2, 2009) titled "Pipeline Safety: Updates to Pipeline and Liquefied Natural Gas Reporting Requirements" that addresses these two recommendations. A final Federal Register notice (75 FR 72878) was published November 26, 2010, and the Office of Management and Budget is expected to approve the rule within 60 days of publication. A copy of the notice is enclosed.

PHMSA takes the safety recommendations from the NTSB seriously and is focused on fulfilling the requirements of these two recommendations. Through this final rule, we have implemented the changes recommended from NTSB safety recommendations P-07-7 and P-07-8 and therefore requests the classification of the two recommendations be changed to "Closed-Acceptable Action."

If you have questions, concerns, or comments, please feel free to contact me at 202-366-4433.

Sincerely yours,

A handwritten signature in cursive script that reads "Cindy Douglass".

Cynthia Douglass
Assistant Administrator/Chief Safety Officer

Enclosure

E. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

48. The RFA requires an agency to describe any significant alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): (1) The establishment of differing compliance and reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design, standards; and (4) an exemption from coverage of the rule, or part thereof, for small entities.

49. The Commission asks commenters to refresh the record on what further steps the Commission should take to improve the process of changing providers and provide any new ideas that reflect and build upon the new one-business day interval. The Commission also seeks comment on the benefits and burdens, especially the burdens on small entities, of adopting any new rules regarding the porting process. The Commission expects to consider the economic impact on small entities, as identified in comments filed in response to the FNPRM, in reaching its final conclusions and taking action in this proceeding.

F. Federal Rules That May Duplicate, Overlap, or Conflict With the Proposed Rules

50. None.

Initial Paperwork Reduction Act of 1995 Analysis

This document does not contain proposed information collection(s) subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. In addition, therefore, it does not contain any new or modified "information collection burden for small business concerns with fewer than 25 employees," pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, see 44 U.S.C. 3506(c)(4).

Ordering Clauses

It is ordered that pursuant to Sections 1, 4(i), 4(j), 251, and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. 151, 154(i)-(j), 251, 303(r), the Further Notice of Proposed Rulemaking in WC Docket No. 07-244 and CC Docket No. 95-116 is adopted.

It is further ordered that the Commission's Consumer and Governmental Affairs Bureau, Reference

Information Center, shall send a copy of this Report and Order and Further Notice of Proposed Rulemaking, including the Final Regulatory Flexibility Analysis and the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

Federal Communications Commission.

Marlene H. Dortch,

Secretary.

[FR Doc. E9-15131 Filed 7-1-09; 8:45 am]

GULING CODE 4712-01-P

DEPARTMENT OF TRANSPORTATION

Pipeline and Hazardous Materials Safety Administration

49 CFR Parts 191, 192, 193, and 195

[Docket No. PHMSA-2008-0291]

RIN 2137-AE33

Pipeline Safety: Updates to Pipeline and Liquefied Natural Gas Reporting Requirements

AGENCY: Pipeline and Hazardous Materials Safety Administration (PHMSA), Department of Transportation (DOT).

ACTION: Notice of proposed rulemaking.

SUMMARY: This Notice of Proposed Rulemaking seeks to revise the Pipeline Safety Regulations to improve the reliability and utility of data collections from operators of natural gas pipelines, hazardous liquid pipelines, and liquefied natural gas (LNG) facilities. These revisions will enhance PHMSA's ability to: understand, measure, and assess the performance of individual operators and industry as a whole; integrate pipeline safety data to allow a more thorough, rigorous, and comprehensive understanding and assessment of risk; and expand and simplify existing electronic reporting by operators. These revisions will improve both the data and the analyses PHMSA relies on to make critical, safety-related decisions, and will facilitate PHMSA's allocation of inspection and other resources based on a more accurate accounting of risk.

DATES: Submit comments by August 31, 2009.

ADDRESSES: Comments should reference Docket No. PHMSA-2008-0291 and may be submitted in the following ways:

• **E-Gov Web Site:** <http://www.regulations.gov>. This Web site allows the public to enter comments on any Federal Register notice issued by any agency. Follow the instructions for submitting comments.

• **Fax:** 1-202-493-2251.
• **Mail:** Docket Management System: U.S. Department of Transportation, Docket Operations, M-30, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590-0001.

• **Hand Delivery:** DOT Docket Management System, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590-0001 between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Instructions: If you submit your comments by mail, submit two copies. To receive confirmation that PHMSA received your comments, include a self-addressed stamped postcard.

Note: Comments are posted without changes or edits to <http://www.regulations.gov>, including any personal information provided. There is a privacy statement published on <http://www.regulations.gov>.

FOR FURTHER INFORMATION CONTACT: Roger Little by telephone at (202) 366-4569 or by electronic mail at roger.little@dot.gov.

SUPPLEMENTARY INFORMATION:

I. Objective

PHMSA is seeking to improve the use of incident, infrastructure, and performance data in its approaches to improve pipeline safety. As part of PHMSA's strategy to become a more risk-based and data-driven organization, PHMSA is proposing the following general data and data management improvements to the pipeline safety regulations:

1. Modify the scope of part 191 addressed in 49 CFR 191.1 to reflect the changes made in the scope of part 192 to the definition of gas gathering lines.
2. Change the definition of an "incident" in 49 CFR 191.3 to require an operator to report an explosion or fire not intentionally set by the operator. The proposal also establishes a volumetric basis for reporting unexpected or unintentional gas loss. These reporting changes will more accurately depict the safety performance of gas pipelines over time.
3. Require operators to report and file data electronically whenever possible. The electronic submission of data will increase the accuracy and quality of data collected which, in turn, will improve PHMSA's data integration efforts. Electronic submission will also reduce the reporting burden on operators.
4. Require operators of LNG facilities to submit incident and annual reports. This data will provide valuable infrastructure information to PHMSA.

and allow for a more thorough evaluation of the safety performance of LNG facilities.

5. Create and require participation in a National Registry of Pipeline and LNG Operators. This data will provide PHMSA with timely updates on significant and potential safety-impacting changes occurring under its purview, and help PHMSA to better monitor and assess operator performance.

6. Require operators to use a standard form in electronically submitting Safety-Related Condition Reports and Offshore Pipeline Condition Reports. This will ensure consistency of data submitted across the pipeline industry.

7. Merge the natural gas transmission integrity management Semi-Annual Performance Measures Report with the annual reports. Revise the leak cause categories listed in the annual report to include those nine categories listed in ASME B31.8S. This change will significantly reduce the reporting burden on operators by changing the current semi-annual requirement. Expand information on the natural gas transmission annual report to add information for miles of gathering lines by Type A and Type B gathering; class location information by SMYS, volume of commodity transported, and type of commodity transported.

8. Modify hazardous liquid operator telephonic notification of accidents to require operators to have and use a procedure to calculate and report a reasonable initial estimate of released product and to provide an additional telephonic report to the National Response Center if significant new information becomes available during the emergency response phase.

9. Require operators of hazardous liquid pipelines to submit pipeline information by State on the annual report for hazardous liquid pipelines. This data will allow PHMSA to improve its allocation of inspection and other resources through a better understanding of the infrastructure it regulates.

10. Remove obsolete provisions that would conflict with the proposal to require electronic submission of all reports and update OMB control numbers for information collections.

11. Update OMB control numbers assigned to information collections.

II. Background

The statutory authority under 49 U.S.C. 60101 *et seq.* authorizes this proposal; these Federal Pipeline Safety Laws grant broad authority to the Pipeline and Hazardous Material Safety Administration to regulate pipeline

safety. The proposed data collection and filing requirement revisions are wholly consistent with Section 15 of the PIPES Act of 2006 (Pub. L. 109-468, December 26, 2006), which requires PHMSA to review and modify the reporting criteria as appropriate to ensure that the data accurately reflects trends over time.

For natural gas pipeline operators specific reporting requirements in 49 CFR Part 191 are found at:

- § 191.5 Telephonic notice of certain incidents.
- § 191.7 Addresses for written reports.
- § 191.9 Natural gas distribution incident report.
- § 191.11 Natural gas distribution annual report.
- § 191.15 Natural gas transmission and gathering incident report.
- § 191.17 Natural gas transmission and gathering annual report.
- § 191.23 Reporting safety-related conditions.
- § 191.25 Filing safety-related condition reports.
- § 191.27 Filing offshore pipeline condition reports.

The requirement for reporting leaks and spills of LNG in accordance with Part 191 is found at § 193.2011. Part 191 excludes LNG from many of the reporting requirements.

For hazardous liquid pipeline operators specific reporting requirements in 49 CFR Part 195 are found at:

- § 195.40 Annual report.
- § 195.50 Reporting accidents.
- § 195.52 Telephonic notice of certain accidents.
- § 195.54 Accident reports.
- § 195.55 Reporting safety-related conditions.
- § 195.56 Filing safety-related condition reports.
- § 195.57 Filing offshore pipeline condition reports.
- § 195.58 Address for written reports.

As the Nation's repository for pipeline data, PHMSA's data is used not only by PHMSA, but by State pipeline safety programs; congressional committees; metropolitan planners; civic associations and other local community groups; pipeline research organizations; industry safety experts; industry watch groups; the media; the public; industry trade associations; industry consultants; and members of the pipeline and energy industries. A significant amount of critical safety information is cultivated from PHMSA's data through statistical analysis and information retrieval. One of the agency's most valued assets is the data it collects, maintains, and analyzes pertaining to the industry. PHMSA is

responsible for maintaining the most comprehensive collection of accident/incident data for intrastate and interstate pipelines in the country. PHMSA is subject to constant and continued interest and scrutiny by numerous and varied stakeholders for the reliability, utility, and applicability of information and statistics pertaining to pipelines and LNG facilities, including the collection, tracking, and retrieval of historical data. PHMSA, therefore, must periodically modify its information and data collections and associated processes to address changes in industry business practices, changes in PHMSA's regulations, and changes in PHMSA's own data analysis strategies and objectives.

As an example of one such needed change, LNG operators are currently exempt from annual and incident reporting requirements, whereas the operators of gas transmission, gas distribution, and hazardous liquid pipelines are required to report summary data annually and any incidents or accidents that meet reporting requirements specified in pipeline safety regulations. Given the increased number of LNG plants under construction, along with the understandable desire for PHMSA to better monitor the safety performance of this critical portion of the nation's energy infrastructure, this proposal removes the existing exemption for this reporting for operators of LNG facilities.

This proposed rule also supports PHMSA's strategic objectives aimed at risk reduction and the continuous improvement of the integrity of the nation's pipeline systems. The data collection improvements proposed in this proposed rule will enhance PHMSA's standing analytical capability and strengthen PHMSA's understanding of risk, all based on sound data. PHMSA will use the data to help drive program priorities and resource decisions, improve the ability to detect emerging risks, and focus prevention activities.

III. Petitions for Rulemaking and Recommendations

Petition for Rulemaking

On November 7, 2005, the Interstate Natural Gas Association of America (INGAA) submitted a Petition for Rulemaking asking PHMSA to change the definition of an incident to adequately provide a method to normalize skewing due to inflationary price increases of gas lost. INGAA asserted that the practical effect of the cost based reporting threshold has skewed the number of incidents

reported upwards as the cost of natural gas has continued to rise.

Under the current definition, a reportable incident includes estimated property damage, including cost of gas lost, of the operator or others, or both, of \$50,000 or more (49 CFR 191.3). In its petition, INGAA asserts that the current definition effectively froze the dollar amount of the cost of an incident to 1984/1985 levels. Therefore, INGAA claims that, although less gas is being released, more incidents are being reported because the price of gas has escalated over time. INGAA recommended PHMSA establish a volume-based threshold for a reportable incident. A copy of the petition is in the docket.

Recommendations

This proposed rule also responds to various Government Accountability Office (GAO) and National Transportation Safety Board (NTSB) recommendations. In GAO's report, entitled "Natural Gas Pipeline Safety: Integrity Management Benefits Public Safety, but Consistency of Performance Measure Should Be Improved." (GAO-05-946, September, 2005), GAO stated that the current gas incident reporting requirements do not adjust for the changing cost of gas released in incidents. GAO recommended that PHMSA "revise the definition of a reportable incident to consider changes in the price of natural gas."

In this report GAO also recommended PHMSA revise reporting of performance measures for the integrity management programs to measure the impact of the program. GAO recommended that PHMSA improve the measures related to incidents, leaks, and failures to compare performance over time and make the measures more consistent with other pipeline safety measures. GAO also stated that the incident reporting requirements should adjust for changes in the price of natural gas, because the value of gas released is a key factor in determining whether an incident must be reported.

The NTSB recommended that PHMSA modify 49 CFR 195.52 of the hazardous liquid regulations to require pipeline operators to have a procedure to calculate and provide a reasonable initial estimate of released product in the telephonic report to the National Response Center (NTSB Safety Recommendation P-07-07). NTSB also recommended that the hazardous liquid regulations require pipeline operators to provide an additional telephonic report to the National Response Center if significant new information becomes available during the emergency

response (NTSB Safety Recommendation P-07-08).

IV. Section by Section Analysis

(1) *Modifying the Scope of Part 191 To Reflect the Change to the Definition of Gas Gathering Lines*

49 CFR 191.1

On Wednesday, March 15, 2006, PHMSA published a new final rule, redefining the definition of gas gathering line. Part of that rulemaking effort changed the scope of Part 192 which is addressed in § 192.1. However, this rulemaking project inadvertently overlooked making the corresponding changes to the scope of Part 191 in § 191.1. Because of this omission, operators of gathering lines have been reporting the number of miles of gas gathering lines by the old definition and not by the new. § 191.1 would be changed to reflect the new gas gathering line definition.

(2) *Changing the Definition of an "Incident"*

49 CFR 191.3

This proposal would change the definition of an incident in 49 CFR 191.3 to establish a new reporting category: an explosion or fire not intentionally set by the operator. This proposed change would make the definition consistent with the accident reporting criteria in 49 CFR Part 195. The proposal also establishes a volumetric basis of 3,000 MCF for reporting unintentional gas loss.

Justification

Explosion or Fire Not Intentionally Set by the Operator

Adding "explosion or fire not intentionally set by the operator" as a category to the definition of a reportable incident will enable PHMSA to gain information on significant incidents, as fires and explosions are major adverse outcomes that significantly raise the risk of death or injury from a pipeline failure. PHMSA's analysis of its accident/incident database showed the risk of death or injury increased by a magnitude of four-to-five times if there was a fire or explosion, compared to incidents without a fire or explosion. This revision would also make the natural gas pipeline incident reporting requirement consistent with the reporting requirement for hazardous liquid pipelines.

Volume Measure for Released Gas

Under the existing definition, a reportable incident includes estimated property damage, including cost of gas lost, of the operator or others, or both,

of \$50,000 or more. Therefore, although less gas is being released, more incidents are being reported because the value of natural gas has escalated over time. This proposal would establish a volumetric basis for unplanned gas loss for reporting an incident.

In November 2005, INGAA submitted a petition for rulemaking recommending PHMSA adopt a volume basis instead of the cost of gas lost. INGAA recommended 20,000 MCF (20 million standard cubic feet) as a reporting threshold. INGAA based this volume on the \$50,000 reporting threshold and the 1985 cost of gas at \$2.50 per MCF.

The definition of the term "incident" affects both natural gas distribution and transmission operators. A strategy and proposed solution to address the problem posed by the escalating cost of gas therefore must apply to both natural gas distribution and transmission operators. Historical data indicates that INGAA's recommended amount of 20,000 MCF is too high to have any impact on distribution incident reporting and would significantly reduce the number of gas transmission incident reports to PHMSA, inhibiting PHMSA's ability to accurately track the number of incidents and to learn from the already small number of reportable incidents that occur annually.

PHMSA proposes to revise the definition of incident to add a reporting criterion for 3,000 MCF of gas lost. PHMSA believes that 3,000 MCF more accurately represents the median volume of gas lost reported through transmission incident reports since 2002. The 3,000 MCF proposed volume represents a large amount of gas from a small pipeline that would have less potential to do major damage, compared to a small amount of gas from a large pipeline (e.g. 30- to 40-inch diameter) that could cause major damage.

(3) *Requiring Electronic Reporting and Filing of Reports*

49 CFR 191.7 and 195.58

We are proposing to require an operator of a regulated pipeline or facility as defined in § 191.3 or § 195.2 to submit all reports to PHMSA electronically.

Justification

To improve the processing of submitted reports, PHMSA proposes to modify §§ 191.7 and 195.58 to require electronic reporting and updating of operator data in PHMSA databases.

Electronic data submission will enhance efficiency while reducing paperwork burdens. Currently, 55-80% of operators submit reporting data

electronically. The remaining operators submit large volumes of reporting data to PHMSA in paper format. Often these operators submit incomplete data, inconsistent data, and improperly filled-in forms. PHMSA lacks resources to verify individual data elements and seek further information to correct errors. Any PHMSA electronic filing requirement will be a function of the ability of the regulated industry to report data electronically to PHMSA. Given the size and technological capacity of pipeline operators, PHMSA believes the regulated industry has the required technological capability to provide required data to PHMSA electronically. However, should any operator lack the technological capacity for electronic reporting, we are proposing that the operator notify PHMSA and request an alternative to comply with this requirement. Such requests for alternative methods must be submitted to PHMSA by mail or fax. PHMSA specifically invites comments from operators on the burden the proposed electronic reporting requirement would impose.

Mandatory electronic filing is wholly consistent with the E-Government Act of 2002 (Pub. L. 107-347) and the Government Paperwork Elimination Act of 1998 (Pub. L. 105-277) requirements. By placing required data fields in an electronic form pipeline and liquefied natural gas facility operators will submit more concise, complete, and accurate information in a format that will improve PHMSA's ability to use the information, ensure compliance, and reduce risk. PHMSA has the authority and sufficient justification for requiring data collection on pipeline-related matters by electronic filing. As discussed above, electronic filing, as encouraged by the E-Gov initiative, will greatly benefit PHMSA. PHMSA has provided electronic reporting as a method of filing required reports since 2002. PHMSA believes the regulated industry possesses the technological expertise, skills, equipment (hardware and software), internet access etc., and generally prefers to submit data electronically as opposed to hard copy. Some affected smaller business or individuals, however, may not have the required skills or equipment and the cost of acquiring these necessary resources for electronic filing could be costly. Therefore, PHMSA will provide alternatives, such as paper forms submitted through mail or facsimile, for those operators who notify PHMSA that they are unable to report electronically and request an alternative.

As part of the revisions to §§ 191.7 and 195.58, PHMSA proposes to remove

the language on filing duplicate copies of annual and incident reports to State agencies because any State filing requirement is independent of PHMSA's requirements. With the new requirement to file reports electronically, we see this provision on State filing requirements as only adding confusion.

We will continue to require safety-related condition reports to be submitted concurrently to the applicable State agency for intrastate pipeline transportation and on interstate transportation facilities, where the State acts as PHMSA's agent.

(4) Requiring LNG Operators To Submit Incident and Annual Reports

49 CFR 191.9, 191.15, 191.17 and 193.2011

PHMSA proposes to amend §§ 191.15, 191.17, and 193.2011 to require LNG facility operators to submit annual and incident reports consistent with the current reporting requirements for gas and hazardous liquid pipeline operators.

Justification

Currently, 49 CFR 193.2011 requires LNG operators to report leaks and spills of LNG according to the requirements in Part 191, Part 191 provides the requirements for Annual Reports, Incident Reports, and Safety Related Condition Reports. LNG facilities are exempt from the requirements for incident reporting in § 191.15 and annual reporting in § 191.17.

Various GAO and internal assessments have identified the need for improved data quality in the area of LNG operations. PHMSA does not collect annual reports or incident reports for LNG facilities. These reports would provide timely information needed to improve PHMSA's ability to effectively evaluate the safety performance of the LNG industry, to monitor significant changes to plant or facility operations, and to aid regulatory decision making regarding LNG operations. PHMSA will also use the information for accurate user fee assessments.

The proposed data collection and reporting requirements for LNG operators are consistent with the current PHMSA reporting requirements for gas and hazardous liquid pipeline operators.

(5) Creating a National Registry of Pipeline and LNG Operators

49 CFR 191.22 and 195.64

In this proposed rule we are proposing that all regulated pipeline

operators and LNG plant or LNG facility operators must obtain an Operator Identification (OPID) number from PHMSA. An "operator" of a regulated pipeline, pipeline facility, LNG plant or LNG facility—or group of regulated pipelines or facilities—as defined in §§ 191.3 and 195.2 will be required to submit all reports for those regulated pipelines or facilities using the assigned OPID for the specific pipeline segments or facilities for which the operator requested the OPID.

This proposal would require operators to use this OPID for all submissions (National Pipeline Mapping System, Annual report, accident, incident, safety-related condition etc.) to PHMSA. If an operator has a single OPID, then all of its reporting to PHMSA for regulated pipelines, pipeline facilities, and/or LNG facilities will use the one number assigned to the company for those assets. If an operator has multiple OPIDs, the operator must determine which OPID is assigned to which specific and unique pipeline segments or facilities, and use that OPID consistently for those pipeline segments or facilities in reporting to PHMSA.

To ensure consistency and accuracy of information collection, even those operators with an existing OPID must reapply. If the pipeline segments or facilities associated with an existing OPID have not changed, the existing OPID would not change. Changes to OPID assigned numbers would occur on a case-by-case basis depending on the extent of mergers, acquisitions, divestitures, etc. that have occurred since PHMSA assigned the existing OPID.

We are also proposing that an operator notify PHMSA at least 60 days in advance of certain profile or other changes to its facilities which could impact public safety. Such changes would include any of the following activities for an existing or new pipeline, pipeline segment, pipeline facility, LNG plant, or LNG facility:

- A change in the operating entity responsible for operating an existing pipeline, pipeline segment, or facility.
- A change in the operating entity responsible for managing or administering a safety program (such as an Integrity Management or Corrosion Protection Program) covering an existing pipeline, pipeline segment, or facility.
- The acquisition or divestiture of 50 or more miles of an existing regulated pipeline or pipeline segment.
- Any rehabilitation, replacement, modification, upgrade, uprate, or update costing \$5 million or more.
- The construction of 10 or more miles of a new hazardous liquid or gas

transmission pipeline facility, or other construction project costing \$5 million or more.

- The construction of a new LNG plant or LNG facility, or the sale or purchase of an existing LNG plant or LNG facility.

Justification

A National Registry of Pipeline and LNG Operators will serve as the storehouse for the reporting requirements for an operator regulated or subject to reporting requirements under 49 CFR Parts 192, 193, or 195. Essential to the effectiveness of PHMSA's oversight is the ability to monitor and assess the performance of the regulated community—examining both discrete performance as well as historical trending over time. The single greatest challenge to PHMSA's ability to track performance—and in particular, performance over time—is the dynamic nature of the regulated community itself. Due to conversions of service, new construction, and abandonments, or changes in ownership that occur during divestitures, acquisitions, or contractual turnovers, operators' asset profiles often change year-to-year, rendering historical trending inaccurate. Currently, PHMSA does not receive any alerts, information, or notification of these types of changes and we lack any mechanism to track or capture these changes when they occur. As a result, PHMSA's ability to accurately portray and assess the performance of individual operators is severely compromised, with the problem deteriorating over time as operating and asset changes accumulate and compound.

Additionally, there is an increased burden to industry and to PHMSA in tracking and maintaining potentially numerous OPID's for the same company. Some companies accumulate a large number of OPID's, often inadvertently, as the company reports across a variety of lines of business (e.g., operators may use separate OPID's for reporting their user fee mileage, safety-related conditions, National Pipeline Mapping System (NPMS) submissions, incidents, and annual infrastructure and integrity management data.) The proposed National Registry of Pipeline and LNG Operators will facilitate the use of one OPID across a company's reporting requirements for a given set of pipeline segments or facilities thereby reducing the burden on both PHMSA and industry for tracking these multiple, duplicative OPID's.

This proposed rulemaking will also require operators to notify PHMSA when they experience significant asset

changes that affect PHMSA's ability to accurately monitor and assess pipeline safety performance. Certain types of changes to or within an operator's facilities or pipeline network represent potential safety-altering activities for which PHMSA may need to inspect, investigate, or otherwise oversee to ensure that any public safety concerns are adequately and proactively addressed. In these cases, this timely notification will allow PHMSA to mobilize inspection resources or notify one of its partner State pipeline safety agencies if needed.

This proposed Registry will include mandatory registration and notification requirements, which do not exist within PHMSA's current OPID assignment process. This Registry is necessary to compile an integrated national pipeline inventory of operator contact and facility information that is sustainable and can evolve over time to accommodate an ever-changing environment. Implementing a National Registry of Pipeline and LNG Operators will ensure that PHMSA's communications with representatives of the regulated community are complete and accurate, achieving a level of assurance that does not exist within PHMSA's existing OPID assignment process. The proposed Registry will also enable PHMSA to distribute up-to-date pipeline safety information for various technology applications used in the performance of inspections, regulatory oversight, reporting, and other safety-based needs, and will provide the accurate and up-to-date compilation of operating entities and facilities that is a critical element of PHMSA's pipeline safety mission.

Moreover, the accurate and timely representation of the scope and make-up of the nation's pipeline and LNG facility infrastructure is not only critical to PHMSA, but it is also critical to the various oversight bodies, Congress, the GAO, the DOT Inspector General, and the NTSB. Other stakeholders such as safety and environmental advocacy groups, and State and local pipeline safety partners also rely on the accuracy and completeness of this information.

(6) Requiring Electronic Safety-Related Condition and Offshore Pipeline Condition Reports

49 CFR 191.25, 191.27, 195.56, 195.57 and 195.58

We are proposing to require an operator of a natural gas or hazardous liquid pipeline, or of an LNG plant or LNG facility to use a new standardized form instead of the free-form Safety-Related Condition reporting now used.

The requirement under § 191.7 and under § 195.58 to file Safety-Related Condition reports concurrently with State agencies under the conditions outlined in those sections for filing with State agencies would still apply.

We are also proposing to require an operator of a hazardous liquid pipeline to use a new standardized form instead of the free-form Offshore Pipeline Condition Report now used.

Justification

PHMSA requires an operator of a natural gas pipeline or LNG plant or LNG facility to report the existence of a safety-related condition (SRC) meeting the criteria specified in § 191.23. Hazardous liquid operators must report a SRC using the criteria in § 195.55. An operator must file a report within five working days after determination but no later than ten working days after discovery of the condition. Reports are sent by facsimile to PHMSA. This proposed rule proposes to amend §§ 191.25, 195.56 and 195.58 to require operators to submit the information electronically through a standardized form.

For offshore pipeline conditions, PHMSA requires an operator to report certain information within 60 days after completion of the inspection of all its underwater pipelines subject to § 192.6(2a) or § 195.413(a). This proposed rule proposes to obtain this information on a standardized form, filed electronically with PHMSA.

These proposed requirements will ensure that PHMSA obtains all the pertinent information it needs to perform its assessments and safety analyses; ensure that operators report all the required data; ensure consistent reporting across the regulated community; reduce the data management burden on PHMSA; and, reduce the reporting burden on operators. A copy of each form is available in the docket.

(7) Merging the Gas Transmission Integrity Management Semi-Annual Performance Measures Report With the Gas Transmission Operator Annual Reports

49 CFR 192.945 and 192.951

PHMSA is proposing to merge the gas transmission Integrity Management Program semi-annual performance measures reports with the annual reports.

Justification

Operators of gas transmission pipelines subject to Subpart O, "Pipeline Integrity Management", must

submit four overall measures of their integrity management performance on a semi-annual basis, as required by § 192.945. On December 15, 2003, PHMSA published a new Subpart O to the regulations governing safety of gas pipelines in 49 CFR Part 192 (68 FR 69778). Subpart O establishes requirements governing integrity management programs for gas transmission pipelines. Included among these provisions are requirements for each gas transmission pipeline operator to maintain quantitative measures of its integrity management performance as specified in ASME/ANSI B31.8S, "Managing System Integrity of Gas Pipelines", Section 9.4 (49 CFR 192.945). The same regulation requires that each operator submit the performance measures to PHMSA semi-annually. The report on performance measures collects information on the number of pipeline miles inspected; the number of immediate repairs completed; the number of scheduled repairs completed; and the number of leaks, failures, and incidents in the High Consequence Areas.

A consequence of moving these reporting requirements to a gas transmission operator's annual report for ASME/ANSI B31.8S performance metrics is that the annual report is by State. Moreover, for the ASME/ANSI B31.8S performance metrics, the annual report will seek separate reporting for interstate and intrastate facilities and system information. Operators will identify if they are interstate or intrastate. If an operator has interstate mileage it will be able to report by State or have the data rolled up into a single report. If an operator is an intrastate operator, the report is already by State. The acceptable means for submitting reports required by Subpart O are in 49 CFR 192.951.

In addition, PHMSA is proposing that operators submit the required performance measures through the annual report required in § 191.17. This regulatory change will reduce the reporting burden of the industry from twice a year to once a year and will allow PHMSA to identify the location of the inspection, repairs, leaks, failure, and incidents in a high consequence area.

The existing section on the annual report for reporting total leaks eliminated or repaired during the year has seven cause categories, while the equivalent information on the biannual reporting for gas integrity management, as specified in ASME B31.8s, has nine cause categories. GAO noted the inconsistency in its report (GAO-06-946), "Natural Gas Pipeline Safety:

Integrity Management Benefits Public Safety, but Consistency of Performance Measure Should Be Improved." GAO recommended PHMSA improve the measures related to incidents, leaks, and failures to better allow for optimal comparison of performance over time and make them more consistent with other pipeline safety measures. To achieve consistency PHMSA proposes to revise the annual report form DOT form 7100.2-1 to replace the seven annual report leak cause categories with the ASME B31.8s nine cause categories. A copy of the revised annual report is available for review in the public docket.

The ASME B31.8s nine cause categories are as follows:

- External Corrosion.
- Internal Corrosion.
- Stress Corrosion Cracking.
- Manufacturing.
- Construction.
- Equipment.
- Third Party Damage/Mechanical Damage.
- Incorrect Operations.
- Weather Related/Other Outside Force.

The existing seven cause categories on the Gas Transmission and Gathering System Annual Report are as follows:

- Corrosion.
- Natural Forces.
- Excavation.
- Other Outside Force Damage.
- Material and Welds.
- Equipment and Operations.
- Other.

PHMSA also seeks expanded information on mileage by Type A and Type B gathering lines (refer to 49 CFR 192.9 and 192.9); expanded information on class location by specified minimum yield strength (SMYS) to better understand the effects of recent "special permits" and the final rule (*Pipeline Safety: Standards for Increasing the Maximum Allowable Operating Pressure for Gas Transmission Pipelines*; 73 Fed. Reg. 62148; October 17, 2008) allowing operators to operate certain pipelines at up to 80% SMYS; and information on volume and commodity transported to better understand system miles by product type (propane vs. natural gas for example). The expanded information will enhance our ability to effectively understand the need for further expansion of regulations for gathering lines and high stress lines.

(8) Modifying Hazardous Liquid Operator Telephonic Notification of Accidents Reporting Requirement

49 CFR 195.52

This proposal would require an operator to have a procedure to

calculate and provide a reasonable initial estimate of released product in telephonic reports to the National Response Center (NRC). An operator would also be required to provide additional telephonic reports to the NRC if significant new information becomes available during the emergency response phase of a reported event.

Justification

The NTSB recommended that PHMSA modify 49 CFR 195.52 to require hazardous liquid pipeline operators to have a procedure to calculate and provide a reasonable initial estimate of released product in the telephonic report to the National Response Center (NTSB Safety Recommendation P-07-07). The NTSB also recommended that PHMSA modify the hazardous liquid telephonic notice regulation section to require pipeline operators to provide an additional telephonic report to the National Response Center if significant new information becomes available during the emergency response phase of a reported event (NTSB Safety Recommendation P-07-08).

(9) Requiring Operators of Hazardous Liquid Pipelines To Report Pipeline Information by State on the Annual Report for Hazardous Liquid Pipelines

49 CFR 195.49

This proposal would require operators of hazardous liquid pipelines to submit certain infrastructure and integrity management data for each State a pipeline traverses.

Justification

Currently, natural gas transmission pipeline operators submit State-specific annual reports that give PHMSA a sound and basic understanding of the location, scope, and nature of the pipeline facilities subject to its regulations. Hazardous liquid pipeline operators do not report State-specific information on their annual reports. These reports show the mileage and characteristics of the hazardous liquid pipelines operated by approximately 314 operators with about 165,000 miles of pipelines. These annual reports only contain nationally aggregated information for the general characteristics of the hazardous liquid pipelines, along with fundamental integrity management information. Nationally aggregated information does not provide the granularity of data that is critical to PHMSA's understanding of the risks posed by, as well as the condition of, these pipelines. Although PHMSA's NPMS maintains location information on 310 operators reporting

over 175,000 miles of pipe, none of these submittals contains the desired State-specific pipeline characteristics or integrity management information PHMSA needs to effectively understand, monitor, and assess safety performance and risks more discretely.

This more granular level of understanding and analysis is critical to PHMSA's fundamental safety mission. Capturing this State-specific information for both gas transmission and hazardous liquid pipelines provides PHMSA with the data necessary to identify areas of potential high risk and allocate agency resources accordingly. Without this information, PHMSA cannot differentiate risks and exposures on a State or regional basis, thereby precluding efforts to allocate internal resources based on risk or accurately portray and assess the performance of its various enforcement Regions or individual partner State pipeline safety agencies. The absence of this information also severely limits PHMSA's ability to analyze risks and identify safety issues that may be specific to a particular State or region. Additionally, this level of information would facilitate PHMSA's efforts to reconcile discrepancies between operator NPMS submissions and information submitted through annual reports.

Many States have pipeline safety programs that operate as either PHMSA-certified interstate or PHMSA-certified intrastate agents for hazardous liquid pipelines. PHMSA helps to fund these State programs to reimburse costs for inspections and other safety activities. PHMSA needs to have a full and complete understanding of the scope, nature, and extent of the pipeline infrastructure under each State's purview to be able to assess the effectiveness of funding State pipeline programs for those activities, and to effectively assess, monitor, and compare the State's respective safety performance. Similarly, State pipeline program managers need this same information to plan and manage their own programs.

PHMSA conducted preliminary discussions on the reporting by State proposal with representatives of the hazardous liquid pipeline community. These preliminary discussions were held during meetings with an industry data team consisting of representatives from American Petroleum Institute (API), Association of Oil Pipe Lines (AOPL), and hazardous liquid pipeline operators. This industry data team generally supported reporting by State for the specific areas that PHMSA proposes to obtain annual report

information by State. PHMSA was also urged to consider an efficient method for the collection of the proposed information.

Members of the industry data team also requested PHMSA consider obtaining infrastructure and integrity management (IM) information through the NPMS. PHMSA acknowledges the potential benefits of NPMS submission of infrastructure and IM information. NPMS submission of the information would greatly enhance PHMSA's ability to make informed safety-related assessments and decisions. PHMSA is also mindful of the costs associated with submitting the proposed information via the NPMS as opposed to other means. PHMSA would have to modify the existing geospatial technological architecture of the NPMS to accept the substantial data elements that would have to be submitted if the NPMS were to generate the proposed State totals. These modifications would be costly and are not currently budgeted or planned. To retrofit the NPMS into a format that could accept the substantial data elements requires several years of planning and extensive work by PHMSA. Additionally, we need to determine the percentage of the hazardous liquid operators with the capability to submit information using geospatial technology. Many small companies are not API or AOPL members and we need to better understand the overall abilities and capabilities of the industry before considering this method for the collection of information. This proposed rule therefore seeks comment from any hazardous liquid operator that could not provide information via a geospatial tool.

PHMSA agrees with the potential benefits of NPMS submission for this information. Like the industry data team, PHMSA also recognizes that having the information in a GIS tool greatly facilitates the ease with which such tables can be computed and produced. Although the industry data team believes that virtually all of the API and AOPL members have information in GIS tools, preliminary results from a joint OPS and industry pilot project indicate that industry may not have any additional information other than currently collected in NPMS, in GIS format.

Therefore, PHMSA is requesting comments on whether infrastructure and IM information through NPMS is a better alternative that operators could easily implement. For now, PHMSA will continue to collect the information through the Annual Report until PHMSA determines that industry has

the capability to convert its technological platform into a format that could accept the submission via GIS tool and that the entire industry could adhere to such a format.

(10) Removing Obsolete Provisions

49 CFR 191.10, 191.27, 195.57 and 195.62

PHMSA proposes to remove or revise the following provisions in light of the proposal to require electronic submission of all reports. Electronic reporting makes these requirements obsolete.

- Remove § 191.19, which advises operators they may obtain, without charge, copies of paper report forms and reproduce the forms.

- Remove §§ 191.27(b) and 195.57(b), which require mailing hard copies of Offshore Pipeline Condition reports.

- Revise § 195.54 to remove the option to file an accident report by facsimile.

- Remove § 195.62, which requires operators to maintain an adequate supply of forms that are a facsimile of DOT accident report forms so that the operator may promptly report an accident.

Hard copies of forms will continue to be available on PHMSA's Web site at <http://phmsa.dot.gov/pipeline>.

(11) Updating OMB Control Numbers

49 CFR 191.21 and 195.63

PHMSA proposes to update these sections to add new OMB control numbers for the new forms (and information collection) proposed in this proposed rule. There will be new forms for reporting safety-related and offshore pipeline conditions, LNG incidents and for submitting an LNG annual report.

V. Regulatory Analyses and Notices

Executive Order 12866 and DOT Policies and Procedures

This proposed rule is not a significant regulatory action under section 3(f) of Executive Order 12866 (58 FR 51735) and, therefore, was not reviewed by the Office of Management and Budget. This proposed rule is not significant under the Regulatory Policies and Procedures of the Department of Transportation (44 FR 11034).

Overall, the costs of the proposed rule are expected to be approximately \$1.9 million per year. The present value of this cost over 10 years using a 3 percent discount rate is approximately \$17 million, while its present value over 10 years using a 7 percent discount rate is approximately \$14 million. Those costs cover changes to the 49 CFR to enhance

general data and data management improvements for pipelines. The average of the present value of net benefits over 10 years at a 3 percent discount rate is approximately \$76 million and approximately \$62 million at 7 percent.

The benefits of the proposed rule enhance PHMSA's ability to understand, measure, and assess the performance of individual operators and industry as a whole; integrate pipeline safety data in a way that will allow a more thorough, rigorous, and comprehensive understanding and assessment of risk; expand and simplify existing electronic reporting by operators; improve the data and analyses PHMSA relies on to make critical, safety-related decisions; and facilitate PHMSA's allocation of inspection and other resources based on a more accurate accounting of risk.

A comparison of the benefits and costs of the rule results in positive net benefits. The present value of net benefits (the excess of benefits over costs) for the proposed rule is approximately \$69 million using a three percent discount rate and \$48 million using a seven percent discount rate. A copy of the regulatory evaluation is available for review in the docket.

Regulatory Flexibility Act

The Regulatory Flexibility Act of 1980, as amended, requires Federal agencies to conduct a separate analysis of the economic impact of rules on

small entities. The Regulatory Flexibility Act requires that Federal agencies take small entities' concerns into account when developing, writing, publicizing, promulgating, and enforcing regulations. The modifications noted in the proposed rule will affect hazardous liquid, natural gas pipelines (distribution and transmission), and LNG facility operators. PHMSA does not collect information on number of employees or revenues for pipeline operators. Such a collection would require OMB approval. Nevertheless, PHMSA continues to seek information (and invites comments on this subject) about the number of small pipeline operators to more fully determine impact on small entities.

The Small Business Administration (SBA) size standards for hazardous liquid operators are companies with less than 1,500 employees, including employees of parent corporations. The SBA size standards are \$6.5 million in annual revenues for the natural gas transmission pipeline industry and 500 employees for the natural gas distribution industry.

PHMSA has reviewed the data it collects from the hazardous liquid pipeline industry and has estimated there are 10 to 20 small entities in this industry. PHMSA estimates that about 480 of the gas transmission and gathering firms have less than \$6.5 million in revenues and about 1,000 gas distribution firms have fewer than 500 employees. Information on the market

structure of the LNG industry is scarce but the estimated reporting cost to LNG facilities' operators is very low, and thus, PHMSA assumes that LNG facilities operators, large or small, will not be adversely affected by the requirements in the proposed rule.

The average annual cost of the increased reporting burden of the proposed rule ranges from \$3,804 to \$5,649 for small hazardous liquid operators, \$231 to \$305 for small natural gas operators and from \$683 to \$1,103 for liquefied natural gas operators. These preliminary results suggest that there is not a significant impact on a substantial number of small entities.

Executive Order 13175

PHMSA has analyzed this proposed rule according to the principles and criteria in Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments." Because this proposed rule would not significantly or uniquely affect the communities of the Indian Tribal governments or impose substantial direct compliance costs, the funding and consultation requirements of Executive Order 13175 do not apply.

Paperwork Reduction Act

This proposed rule may result in revisions to several currently approved information collections. The following list contains the potentially impacted information collections and their current approval information:

OMB Control No.	Info collection title	Current expiration date	Currently approved burden hours
1. 2137-0047	Transportation of Hazardous Liquids by Pipeline: Recordkeeping and Accident Reporting.	11/30/2011	51,011
2. 2137-0522	Incident and Annual Reports for Gas Pipeline Operators	1/1/30/2010	36,105
3. 2137-0578	Reporting Safety-Related Conditions on Gas, Hazardous A Liquid, and Carbon Dioxide Pipelines and Liquefied Natural Gas Facilities.	2/28/2011	390
4. 2137-0610	Pipeline Integrity Management in High Consequence Areas Gas Transmission Pipeline Operators.	6/30/2009	1,030,309
5. 2137-0614	Pipeline Safety: New Reporting Requirements for Hazardous Liquid Pipeline Operators: Hazardous Liquid Annual Report.	6/30/2010	5,364

Pursuant to 5 CFR 1320.6(d), PHMSA is required to provide interested members of the public and affected agencies with an opportunity to comment on information collection and recordkeeping requests. This notice identifies revised information collection requests that PHMSA will submit to the Office of Management and Budget (OMB) for approval based on the requirements in this proposed rule.

PHMSA has developed revised burden estimates to reflect changes in this proposed rule. PHMSA estimates that, based on the proposals in this rule, the current information collection burden for these information collections will be revised as follows:

1. **Title of information Collection:** Transportation of Hazardous Liquids by Pipeline: Recordkeeping and Accident Reporting.

OMB Control Number: 2137-0047.

Total Annual Number of Respondents: 300.

Total Annual Responses: 450.

Total Annual Burden Hours: 51,011.

Total Annual Burden Cost:

\$3,302,962.25.

2. **Title of information Collection:** Incident and Annual Reports for Gas Pipeline Operators.

OMB Control Number: 2137-0522.

Total Annual Number of Respondents: 2,289.

Total Annual Responses: 5,620.

Total Annual Burden Hours: 63,153.
Total Annual Burden Cost:
\$2,910,448.

3. Title of information Collection:
Reporting Safety-Related Conditions on
Gas, Hazardous A Liquid, and Carbon
Dioxide Pipelines and Liquefied Natural
Gas Facilities.

OMB Control Number: 2137-0578.
Total Annual Number of
Respondents: 2,673.

Total Annual Responses: 718.
Total Annual Burden Hours: 1,512.
Total Annual Burden Cost: \$46,620.

4. Title of information Collection:
Pipeline Integrity Management in High
Consequence Areas Gas Transmission
Pipeline Operators.

OMB Control Number: 2137-0610.
Total Annual Number of
Respondents: 721.

Total Annual Responses: 721.
Total Annual Burden Hours:
1,018,773.

Total Annual Burden Cost:
\$85,967,753.00.

5. Title of information Collection:
Pipeline Safety: New Reporting
Requirements for Hazardous Liquid
Pipeline Operators: Hazardous Liquid
Annual Report.

OMB Control Number: 2137-0014.
Total Annual Number of
Respondents: 300.

Total Annual Responses: 447.
Total Annual Burden Hours: 11,748
hours.

Total Annual Burden Cost:
\$780,883.00.

Requests for a copy of the information
collection should be directed to
Cameron Satterthwaite, U.S. Department
of Transportation, Office of Regulations,
Pipeline and Hazardous Materials Safety
Administration, 1200 New Jersey
Avenue, SE., East Building, 2nd Floor,
Washington, DC 20590-0001,
Telephone (202) 366-4046.

All comments should be addressed to
the Dockets Unit as identified in the
ADDRESSES section of this proposed rule
and received prior to the close of the
comment period identified in the DATES
section of this proposed rule.

We specifically request comments on
the information collection and
recordkeeping burden associated with
developing, implementing, and
maintaining these requirements for
approval under this proposed rule.

Unfunded Mandates Reform Act of 1995

This proposed rule would not impose
unfunded mandates under the
Unfunded Mandates Reform Act of
1995. It would not result in costs of
\$100 million, adjusted for inflation, or
more in any one year 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 proposed
rulemaking.

National Environmental Policy Act

PHMSA analyzed this proposed rule
in accordance with section 102(2)(c) of
the National Environmental Policy Act
(42 U.S.C. 4332), the Council on
Environmental Quality regulations (40
CFR 1500-1508), and DOT Order
5610.1C, and has preliminarily
determined this action will not
significantly affect the quality of the
human environment. The
Environmental Assessment for this
proposed action is in the docket.

Executive Order 13132

PHMSA has analyzed this proposed
rule according to Executive Order 13132
("Federalism"). The proposed rule does
not have a substantial direct effect 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. This proposed
rule does not impose substantial direct
compliance costs on State and local
governments. This proposed rule would
not preempt State law for intrastate
pipelines. Therefore, the consultation
and funding requirements of Executive
Order 13132 do not apply.

Executive Order 13211

This proposed rule is not a
"significant energy action" under
Executive Order 13211 (Actions
Concerning Regulations That
Significantly Affect Energy Supply,
Distribution, or Use). It is not likely to
have a significant adverse effect on
supply, distribution, or energy use.
Further, the Office of Information and
Regulatory Affairs has not designated
this proposed rule as a significant
energy action.

Privacy Act Statement

Anyone may search the electronic
form of all comments received for any
of our dockets. You may review DOT's
complete Privacy Act Statement in the
Federal Register published on April 11,
2000 (70 FR 19477) or visit <http://dms.dot.gov>.

List of Subjects

49 CFR Part 191

Pipeline safety, Reporting and
recordkeeping requirements.

49 CFR Part 192

Pipeline safety, Fire prevention,
Security measures.

49 CFR Part 193

Pipeline safety, Fire prevention,
Security measures, and Reporting and
recordkeeping requirements.

49 CFR Part 195

Ammonia, Carbon dioxide,
Incorporation by reference, Petroleum,
Pipeline safety, Reporting and
recordkeeping requirements.

In consideration of the foregoing, we
propose to amend 49 CFR Chapter I as
follows:

PART 191—TRANSPORTATION OF NATURAL AND OTHER GAS BY PIPELINE; ANNUAL REPORTS, INCIDENT REPORTS, AND SAFETY- RELATED CONDITION REPORTS

1. The authority citation for Part 191
continues to read as follows:

Authority: 49 U.S.C. 5121, 60102, 60103,
60104, 60108, 60117, 60118, and 60124, and
49 CFR 1.53.

1a. In § 191.1, paragraph (b)(4) is
revised to read as follows:

§ 191.1 Scope.

* * * * *

(b) * * *

(4) Onshore gathering of gas—
(i) Through a pipeline that operates at
less than 0 psig (0 kPa);

(ii) Through a pipeline that is not a
regulated onshore gathering line (as
determined in § 192.8 of this
subchapter); and

(iii) Within inlets of the Gulf of
Mexico, except for the requirements in
§ 192.612.

2. In § 191.3, the definition of
"Incident" is revised to read as follows:

§ 191.3 Definitions.

* * * * *

Incident means any of the following
events:

(1) An event that involves a release of
gas from a pipeline, or of liquefied
natural gas, liquefied petroleum gas,
refrigerant gas, or gas from an LNG
facility, and that results in one of the
following consequences:

(i) A death, or personal injury
necessitating in-patient hospitalization;

(ii) Estimated property damage of
\$50,000 or more, including loss to the
operator and others, or both;

(iii) Estimated gas loss of 3,000
million cubic feet or more;

(iv) An explosion or fire not
intentionally set by the operator.

(2) An event at an LNG plant or LNG
facility that results in an emergency
shutdown, excluding the activation of
emergency shutdown devices for
maintenance.

(3) An event that is significant in the
judgment of the operator, even though it

did not meet the criteria of paragraphs (1) or (2) of this definition.

3. Section 191.7 is revised to read as follows:

§ 191.7 Report submission requirements.

(a) *General.* An operator must submit each report required by this Part electronically to the Pipeline and Hazardous Materials Safety Administration at <http://opsweb.phmsa.dot.gov>. If electronic reporting imposes an undue burden and hardship, the operator must submit a written request for an alternative reporting method to the Information Resources Manager, Office of Pipeline Safety, Pipeline and Hazardous Materials Safety Administration, PHP-10, 1200 New Jersey Avenue, SE., Washington, DC 20590. The request must describe the undue burden and hardship and be sent at least 60 days prior to the due date of the report.

(b) *Safety-related conditions.* An operator must submit concurrently to the applicable State agency a safety-related condition report required by § 191.23 for intrastate pipeline transportation or when the State agency acts as an agent of the Secretary with respect to interstate transmission facilities.

4. In § 191.9, paragraph (c) is revised to read as follows:

§ 191.9 Distribution system: Incident report.

(c) Master meter operators are not required to submit an incident report as required by this section.

5. Section 191.11 is revised to read as follows:

§ 191.11 Distribution system: Annual report.

(a) *General.* Except as provided in paragraph (b) of this section, each operator of a distribution pipeline system must submit an annual report for that system on DOT Form PHMSA F 7100.1-1. This report must be submitted each year, not later than March 15, for the preceding calendar year.

(b) *Not required.* The annual report requirement in this section does not apply to a master meter system or to a petroleum gas system that serves fewer than 100 customers from a single source.

6. Section 191.15 is revised to read as follows:

§ 191.15 Transmission systems; gathering systems; and liquefied natural gas facilities: Incident report.

(a) *General.* Each operator of a transmission or a gathering pipeline

system must submit DOT Form PHMSA F 7100.2 as soon as practicable but not more than 30 days after detection of an incident required to be reported under § 191.5 of this subchapter.

(b) *LNG.* Each operator of a liquefied natural gas plant or facility must submit DOT Form PHMSA F [INSERT FORM NUMBER] as soon as practicable but not more than 30 days after detection of an incident required to be reported under § 191.5 of this subchapter.

(c) *Supplemental report.* Where additional related information is obtained after a report is submitted under paragraph (a) or (b) of this section, the operator must make a supplemental report as soon as practicable with a clear reference by date and subject to the original report.

7. Section 191.17 is revised to read as follows:

§ 191.17 Transmission systems; gathering systems; and liquefied natural gas facilities: Annual report.

(a) *General.* Each operator of a transmission or a gathering pipeline system must submit an annual report for that system on DOT Form PHMSA 7100.2.1. This report must be submitted each year, not later than March 15, for the preceding calendar year.

(b) *LNG.* Each operator of a liquefied natural gas facility must submit an annual report for that system on DOT Form PHMSA [INSERT FORM NUMBER]. This report must be submitted each year, not later than March 15, for the preceding calendar year.

§ 191.18 [Removed]

8. Section 191.19 is removed.

9. Section 191.21 is revised to read as follows:

§ 191.21 OMB control number assigned to information collection.

This section displays the control number assigned by the Office of Management and Budget (OMB) to the information collection requirements in this Part. The Paperwork Reduction Act requires agencies to display a current control number assigned by the Director of OMB for each agency information collection requirement.
OMB Control Number 2137-0522

Section of 49 CFR part 191 where identified	Form No.
191.5	Telephonic
191.9	PHMSA 7100.1
191.11	PHMSA 7100.1-1
191.15	PHMSA 7100.2
191.17	PHMSA 7100.2-1
191.22	PHMSA xxxxx
191.25	PHMSA xxxxx
191.27	PHMSA xxxxx

10. Section 191.22 is added to read as follows:

§ 191.22 National Registry of Pipeline and LNG Operators.

(a) *OPID Request.* Each operator of a gas pipeline, gas pipeline facility, LNG plant or LNG facility must obtain from PHMSA an Operator Identification Number (OPID). An OPID is assigned to an operator for the pipeline or pipeline system for which the operator has primary responsibility. To obtain an OPID or a change to an OPID, an operator must submit a complete and accurate OPID Questionnaire [insert form number]. The OPID Questionnaire must be transmitted electronically to PHMSA through the National Registry of Pipeline and LNG Operators at <http://opsweb.phmsa.dot.gov>. This requirement applies to all new and existing operators, including operators who have already been assigned one or more OPID.

(b) *Changes.* Each operator of a gas pipeline, gas pipeline facility, LNG plant or LNG facility must notify PHMSA electronically through the National Registry of Pipeline and LNG Operators at <http://opsweb.phmsa.dot.gov> 60 days prior to any of the following events:

- (1) A change in the name of the operator;
- (2) A change in the operating entity responsible for an existing pipeline, pipeline segment, or pipeline facility, or LNG facility;
- (3) The acquisition or divestiture of 50 or more miles of pipeline or pipeline system regulated by PHMSA;
- (4) Any rehabilitation, replacement, modification, upgrade, update, or update costing \$5 million or more;
- (5) Construction of 10 or more miles of a new gas transmission pipeline or any project involving a pipeline or pipeline facility costing \$5 million or more; or
- (6) The acquisition or divestiture of an existing LNG plant or LNG facility or construction of a new LNG plant or LNG facility.

(c) *Reporting.* An operator must use the OPID issued by PHMSA for all reporting requirements covered under this subchapter and for submissions to the National Pipeline Mapping System.

(d) *Undue burden.* If electronic reporting imposes an undue burden and hardship, an operator must submit a written request for an alternative reporting method to the Information Resources Manager, Office of Pipeline Safety, Pipeline and Hazardous Materials Safety Administration, PHP-10, 1200 New Jersey Avenue, SE., Washington DC 20590. The request

must describe the undue burden and hardship.

11. Section 191.25 is revised to read as follows:

§ 191.25 Filing safety-related condition reports.

(a) *General.* Each operator must file a report of a safety-related condition under § 191.23(a) on DOT Form PHMSA [INSERT FORM NUMBER]. The report must be filed (received by the Administrator) within five working days (not including Saturdays, Sunday, or Federal Holidays) after the day a representative of the operator first determines or discovers that the condition exists, but not later than 10 working days after the day a representative of the operator determines or discovers the condition.

(b) *Separate conditions.* An operator may describe separate conditions in a single report if the conditions are closely related.

12. Section 191.27 is revised to read as follows:

§ 191.27 Filing offshore pipeline condition reports.

Each operator must, within 60 days after completion of the inspection of all its underwater pipelines subject to § 192.612(a), file an Offshore Pipeline Condition Report on DOT Form PHMSA [INSERT FORM NUMBER].

PART 192—TRANSPORTATION OF NATURAL AND OTHER GAS BY PIPELINE: MINIMUM FEDERAL SAFETY STANDARDS

13. The authority citation for part 192 continues to read as follows:

Authority: 49 U.S.C. 5103, 60102, 60104, 60108, 60109, 60110, 60113, and 60118; and 49 CFR 1.53.

14. In § 192.945, paragraph (a) is revised to read as follows:

§ 192.945 What methods must an operator use to measure program effectiveness?

(a) *General.* An operator must include in its integrity management program methods to measure whether the program is effective in assessing and evaluating the integrity of each covered pipeline segment and in protecting the high consequence areas. Those measures must include the four overall performance measures specified in ASME/ANSI B31.8S (incorporated by reference, see § 192.7 of this subchapter), section 9.4, and the specific measures for each identified threat specified in ASME/ANSI B31.8S, Appendix A. An operator must submit the four overall performance measures

on the annual report required by § 191.17 of this subchapter.

* * * * *
15. Section 192.951 is revised to read as follows:

§ 192.951 Where does an operator file a report?

An operator must file any report required by this subpart electronically to the Pipeline and Hazardous Materials Safety Administration at <http://opsweb.phmsa.dot.gov>. If electronic reporting imposes an undue burden and hardship, an operator must submit a written request for an alternative reporting method to the Information Resources Manager, Office of Pipeline Safety, Pipeline and Hazardous Materials Safety Administration, PHP-10, 1200 New Jersey Avenue, SE., Washington, DC 20590. The request must describe the undue burden and hardship.

PART 193—LIQUIFIED NATURAL GAS FACILITIES: FEDERAL SAFETY STANDARDS

16. The authority citation for part 193 continues to read as follows:

Authority: 49 U.S.C. 5103, 60102, 60103, 60104, 60108, 60109, 60110, 60113, 60116, and 49 CFR 1.53.

17. Section 193.2011 is revised to read as follows:

§ 193.2011 Reporting.

Incidents, safety-related conditions, and annual pipeline summary data for LNG plants or facilities must be reported in accordance with the requirements of part 191 of this subchapter.

PART 195—TRANSPORTATION OF HAZARDOUS LIQUIDS BY PIPELINE

18. The authority citation for part 195 continues to read as follows:

Authority: 49 U.S.C. 5103, 60102, 60104, 60108, 60109, 60110, and 49 CFR 1.53.

19. Section 195.49 is revised to read as follows:

§ 195.49 Annual report.

Each operator must annually complete and submit DOT Form PHMSA F 7000-1.1 for each type of hazardous liquid pipeline facility operated at the end of the previous year. The hazardous liquid operator annual report must be filed by June 15 each year. Each operator must submit a separate report for each State a pipeline traverses. A separate report is required for crude oil, HVL (including anhydrous ammonia), petroleum products, and carbon dioxide pipelines.

20. Section 195.52 is revised to read as follows:

§ 195.52 Telephonic notice of certain accidents.

(a) *Notice requirements.* At the earliest practicable moment following discovery of a release of the hazardous liquid or carbon dioxide transported resulting in an event described in § 195.50, the operator of the system must give notice, in accordance with paragraph (b) of this section, of any failure that:

- (1) Caused a death or a personal injury requiring hospitalization;
- (2) Resulted in either an explosion or fire not intentionally set by the operator;
- (3) Caused estimated property damage, including cost of cleanup and recovery, value of lost product, and damage to the property of the operator or others, or both, exceeding \$50,000;
- (4) Resulted in pollution of any stream, river, lake, reservoir, or other similar body of water that violated applicable water quality standards, caused a discoloration of the surface of the water or adjoining shoreline, or deposited a sludge or emulsion beneath the surface of the water or upon adjoining shorelines; or

(5) In the judgment of the operator was significant even though it did not meet the criteria of any other paragraph of this section.

(b) *Information required.* Reports made under paragraph (a) of this section are made by telephone to 800-424-8802 (in Washington, DC 267-2675) and must include the following information:

- (1) Name, address and identification number of the operator.
- (2) Name and telephone number of the reporter.

- (3) The location of the failure.
- (4) The time of the failure.
- (5) The fatalities and personal injuries, if any.

(6) Initial estimate of amount of product released in accordance with paragraph (c) of this section.

(7) All other significant facts known by the operator that are relevant to the cause of the failure or extent of the damages.

(c) *Calculation.* A pipeline operator must have a written procedure to calculate and provide a reasonable initial estimate of the amount of released product.

(d) *New information.* An operator must provide an additional telephonic report to the National Response Center if significant new information becomes available during the emergency response phase of a reported event.

21. In § 195.54, paragraph (a) is revised to read as follows:

§ 195.54 Accident reports.

(a) Each operator that experiences an accident that is required to be reported under § 195.50 must, as soon as practicable, but not later than 30 days after discovery of the accident file an accident report on DOT Form 7000-1.

* * * * *
22. Section 195.56 is revised to read as follows:

§ 195.56 Filing safety-related condition reports.

(a) *General.* Each operator must file a report of a safety-related condition under § 195.55(a) on DOT Form PHMSA [INSERT FORM NUMBER]. The report must be filed (received by the Administrator) within five working days (not including Saturdays, Sunday, or Federal Holidays) after the day a representative of the operator first determines or discovers that the condition exists, but not later than 10 working days after the day a representative of the operator determines or discovers the condition.

(b) *Separate conditions.* An operator may describe separate conditions in a single report if the conditions are closely related.

23. Section 195.57 is revised to read as follows:

§ 195.57 Filing offshore pipeline condition reports.

Each operator must, within 60 days after completion of the inspection of all its underwater pipelines subject to § 195.413(a), file an Offshore Pipeline Condition Report on DOT Form PHMSA [INSERT FORM NUMBER].

24. Section 195.58 is revised to read as follows:

§ 195.58 Report submission requirements.

(a) *General.* An operator must submit each report required by this part electronically to PHMSA at <http://opsweb.phmsa.dot.gov>. If electronic reporting imposes an undue burden and hardship, the operator must submit a written request for an alternative reporting method to the Information

Resources Manager, Office of Pipeline Safety, Pipeline and Hazardous Materials Safety Administration, PHP-10, 1200 New Jersey Avenue, SE., Washington, DC 20590. The request must describe the undue burden and hardship and be sent at least 60 days prior to the due date of the report.

(b) *Safety related conditions.* An operator must submit concurrently to the applicable State agency a safety-related condition report required by § 191.23 of this subchapter for an intrastate pipeline or when the State agency acts as an agent of the Secretary with respect to interstate pipelines.

§ 195.62 [Removed]

25. Section 195.62 is removed.
26. Section 195.63 is revised to read as follows:

§ 195.63 OMB control number assigned to information collection.

The control numbers assigned by the Office of Management and Budget to the hazardous liquid pipeline information collection pursuant to the Paperwork Reduction Act are 2137-0047, 2137-0601, 2137-0604, 2137-0605, 2137-0618, and 2137-0622.

27. Section 195.64 is added to read as follows:

§ 195.64 National Registry of Pipeline and LNG Operators.

(a) *OPID Request.* Each operator must obtain from PHMSA an Operator Identification Number (OPID). An OPID is assigned to an operator for the pipeline or pipeline system for which the operator has primary responsibility. To obtain an OPID or a change to an OPID, an operator must submit a complete and accurate OPID Questionnaire (insert form number). The OPID Questionnaire must be transmitted electronically to PHMSA through the National Registry of Pipeline and LNG Operators at <http://opsweb.phmsa.dot.gov>. This requirement applies to all operators, including operators who have already been assigned an OPID.

(b) *Changes.* Each operator must notify PHMSA electronically through the National Registry of Pipeline and LNG Operators at <http://opsweb.phmsa.dot.gov>, 60 days prior to any of the following events:

(1) A change in the name of the operator;

(2) A change in the operating entity responsible for operating an existing pipeline, pipeline segment, or pipeline facility;

(3) The acquisition or divestiture of 50 or more miles of pipeline or pipeline system regulated by PHMSA;

(4) Pipeline rehabilitation, pipe replacement, or pipeline system changes to upgrade/upgrade a pipeline or pipeline facility costing \$5 million or more;

(5) Construction of 10 or more miles of a new hazardous liquid pipeline or any project involving a pipeline or pipeline facility costing \$5 million or more; or

(6) The acquisition or divestiture of an existing pipeline facility or construction of a new pipeline facility.

(c) *Reporting.* An operator must use the OPID issued by PHMSA for all reporting requirements covered under this subchapter and for submissions to the National Pipeline Mapping System.

(d) *Undue burden.* If electronic reporting imposes an undue burden and hardship, an operator must submit written request for an alternative reporting method to the Information Resources Manager, Office of Pipeline Safety, Pipeline and Hazardous Materials Safety Administration, PHP-10, 1200 New Jersey Avenue, SE, Washington DC 20590. The request must describe the undue burden and hardship.

Issued in Washington, DC, on June 24, 2009.

Jeffrey D. Wiess,
Associate Administrator for Pipeline Safety.
[FR Doc. E9-15532 Filed 7-1-09; 8:45 am]
BILLING CODE 4910-60-P

Appendix B



U.S. Department
of Transportation
Pipeline and Hazardous Materials
Safety Administration

Administrator

1200 New Jersey Avenue, SE,
Washington, DC 20590

SEP - 1 2010

The Honorable Deborah A. P. Hersman
Chairman
National Transportation Safety Board
490 L'Enfant Plaza East, SW
Washington, DC 20594

Dear Chairman Hersman:

I am sending you this letter to update you on our status on the National Transportation Safety Board (NTSB) safety recommendations issued after the November 1, 2007 hazardous liquid pipeline rupture near Carmichael, Mississippi. The NTSB issued three safety recommendations to the Pipeline and Hazardous Materials Safety Administration (PHMSA), P-09-1, 2, and 3.

NTSB recommended PHMSA conduct a comprehensive study to identify actions that can be implemented by pipeline operators to eliminate catastrophic longitudinal seam failures in electric resistance welded pipe (ERW) (NTSB Safety Recommendation P-09-1). At a minimum, the study should include assessments of the effectiveness and effects of in-line inspection tools, hydrostatic pressure tests, and spike pressure tests; pipe material strength characteristics and failure mechanisms; the effects of aging on ERW pipelines; operational factors; and, data collection and predictive analysis. The NTSB also recommended PHMSA implement actions as needed based on the results of the comprehensive study requested in Safety Recommendation P-09-1 (NTSB Safety Recommendation P-09-2).

In November 2009 PHMSA solicited for a comprehensive study on low frequency Electric Resistance Welded pipe recommended by the NTSB and from technical consensus reached during the 2009 Pipeline R&D Forum. PHMSA received four white papers on that topic, requested proposals from two offerors but only received a proposal from one offeror. Unfortunately that sole offeror was not recommended for award by the diverse Merit Review Panel formed for the solicitation based on the criteria used to evaluate the submissions. PHMSA will try again to solicit for a comprehensive study on low frequency Electric Resistance Welded pipe starting in early FY 2011.

NTSB also recommended PHMSA initiate a program to evaluate pipeline operators' public education programs, including pipeline operators' self-evaluations of the effectiveness of their public education programs, and to provide the NTSB with a timeline for implementation and completion of this evaluation (NTSB Safety Recommendation P-09-3).

PHMSA co-sponsored a public awareness workshop with the National Association of Pipeline Safety Representatives (NAPSR) on June 30, 2010, in Houston, Texas. The workshop provided

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an opportunity for PHMSA and the NPSR representatives to hear about the implementation progress and ascertain what is working and not working regarding the use of the RP 1162 for developing, implementing and evaluating public awareness programs as well as jointly identify critical elements of a successful operator public awareness program. Trade associations and pipeline operators shared lessons learned from implementing their public awareness programs based on the RP 1162 and its incorporation by reference into the Federal pipeline safety regulations. The interests of the public were largely represented at the workshop by representatives from the Pipeline Safety Trust. PHMSA and State Partners discussed the timeline for conducting effectiveness evaluations and the plans to use the results from this event in addition to inspection activities to further develop our program for evaluating pipeline operator public awareness programs.

In addition, PHMSA along with our State pipeline partners have formed an ad hoc public awareness team to develop policy and guidance material for upcoming public awareness effectiveness inspections of pipeline operator public awareness programs. The inspections will focus on how operators evaluated their program for effectiveness, what were the results, were results documented, and what improvements were identified and/or implemented. Inspector training and data collection will also be addressed in these plans. Pilot inspections will be conducted to gain more insight and validate the inspection tools and are expected to take place in the first and second quarter of FY 2011.

PHMSA takes the NTSB safety recommendations seriously and works hard to fulfill the requirements of each recommendation. If you have questions, please feel free to contact me at 202-366-4433.

Regards,



Cynthia L. Quarterman

Appendix B



U.S. Department
of Transportation
Federal Railroad
Administration

Administrator

1200 New Jersey Avenue, SE
Washington, DC 20590

NOV 17 2009

The Honorable Deborah A.P. Hersman
Chairman
National Transportation Safety Board
490 L'Enfant Plaza East SW
Washington, DC 20594

Dear Ms. Hersman:

This is one of seven interim recommendation response letters to update the National Transportation Safety Board (NTSB) on the status of all open safety recommendations addressed to the Federal Railroad Administration (FRA), or that are addressed to the Department of Transportation (DOT) for which FRA has been assigned task responsibility by DOT.

This letter is to update NTSB on the status of the following Safety Recommendations: R-89-48, R-92-22, R-01-2, R-04-4, R-04-5, R-04-6, R-04-7, R-05-16, R-05-17, R-07-2, and R-08-13.

The FRA offers the following interim recommendation responses to these recommendations:

Safety Recommendation R-89-48

"Assist and cooperate with the Research and Special Programs Administration [succeeded by the Pipeline and Hazardous Materials Safety Administration (PHMSA)] in amending 49 CFR Part 179 to require that closure fittings on hazardous materials rail tanks be designed to maintain their integrity in accidents that are typically survivable by the rail tank."

The FRA is working with the Association of American Railroads (AAR) Tank Car Committee and PHMSA in developing new requirements for top fitting protection on all hazardous materials tank cars. At FRA's urging, the AAR is adopting a recommendation to require improved top fitting protection for nonpressurized tank cars ordered after March 31, 2010, for the transportation of Packing Group I and II materials. Top fitting protection systems for these tank cars must be capable of withstanding designated forces including 1W horizontal in the longitudinal direction; ½W vertical in the downward direction; and ½W horizontal in the lateral direction.

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Additionally, PHMSA published a final rule on January 13, 2009, requiring specific design criteria advances for interim poison inhalation hazard (PIH) cars (74 FR 1770). FRA continues to research alternative top fitting protection strategies and will consider next steps relative to the industry's willingness to transfer the improved technology.

The FRA respectfully requests NTSB classify this Safety Recommendation as "Open-Acceptable Alternate Response."

Safety Recommendation R-92-22:

"Develop and promulgate, with the Research and Special Programs Administration [succeeded by PHMSA] requirements for the periodic testing and inspection of rail tank cars that help to ensure the detection of cracks before they propagate to critical length. These requirements are to establish inspection intervals that are based on the defect size detectable by the inspection method used, the stress level, and the crack propagation characteristics of the structural component (requirements based on a damage-tolerance approach)."

To address the NTSB's recommendation, FRA sponsored two research projects. The reports for these efforts are "Tank Car Reliability Design and Analysis," which is available online at www.fra.dot.gov/downloads/Research/ord0705.pdf, and "Development and Application of Methodology for Reliability Assessment of Tank Car Structures: Phase I," available at www.fra.dot.gov/downloads/Research/ord0729.pdf. Phase II of the technical study is currently under review.

Additional studies with the Transportation Technology Center, Inc. are underway to support the derivation of the probability of detection curves and the application of these methods to tank car substructures. This is a collaborative effort with the tank car industry. To date, two reports have been published from this effort: "Railroad Tank Car Nondestructive Methods Evaluation," available at www.fra.dot.gov/downloads/Research/ord0104.pdf, and "Quantitative Nondestructive Testing of Railroad Tank Cars Using the Probability of Detection Evaluation Approach," at www.fra.dot.gov/downloads/Research/ord0104.pdf.

The FRA respectfully requests NTSB continue to classify this Safety Recommendation as "Open-Acceptable Response."

Safety Recommendation R-01-02:

"Evaluate, with the assistance of the Research and Special Program Administration, the Association of American Railroads, and the Railway Progress Institute, the deterioration of pressure relief devices through normal service and then develop inspection criteria to ensure that the pressure relief devices remain functional between regular inspection intervals. [FRA is to] incorporate these inspection criteria into the U.S. Department of Transportation's Hazardous Materials Regulations."

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An AAR Task Force collected more than 5,000 inspection reports on pressure relief devices. After the AAR Tank Car Committee completes its review of the data and shares its findings with the Department, PHMSA and FRA plan to consider regulatory changes, as appropriate.

The FRA respectfully requests NTSB continue to classify this Safety Recommendation as "Open-Acceptable Response," until such time as FRA is able to implement appropriate regulatory changes into DOT's Hazardous Materials Regulations.

Safety Recommendation R-04-4:

"Conduct a comprehensive analysis to determine the impact resistance of the steels in the shells of pressure tank cars constructed before 1989. At a minimum, the safety analysis should include the results of dynamic fracture toughness tests and/or the results of nondestructive testing techniques that provide information on material ductility and fracture toughness. The data should come from samples of steel from the tank shells from original manufacturing or from a statistically representative sampling of the shells of the pre-1989 pressure tank car fleet."

In 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) required FRA to conduct a comprehensive analysis to determine the impact resistance of the steels in the shells of pressurized tank cars constructed before 1989. To address this SAFETEA-LU requirement and NTSB's recommendation, the Southwest Research Institute (a subcontractor to FRA's contractor, the Volpe Center) has produced a final research report on its work in analyzing and testing the impact resistance of the steels in the shells and heads of pre-1989 tank cars, including basic material characterization, tensile property evaluation, chemical makeup, and Charpy V-notch toughness at three different temperatures. The report, published in January 2009, is attached.

The FRA respectfully requests NTSB classify this Safety Recommendation as "Closed-Acceptable Action."

Safety Recommendation R-04-5:

- *"Based on the results of the Federal Railroad Administration's comprehensive analysis to determine the impact resistance of steels in the shells of pressure tank cars constructed before 1989, as addressed in Safety Recommendation R-04-4, establish a program to rank those cars according to their risk of catastrophic fracture and separation and implement measures to eliminate or mitigate this risk. This ranking should take into consideration operating temperatures, pressures, and maximum train speeds."*

The FRA has preliminarily concluded that the results of the research reported under R-04-4 do not demonstrate a clear trend between chemical, tensile, or Charpy V-notch toughness properties and tank car build date, and thus do not support creating a program specifically to rank the tank cars according to their risk. However, on April 1, 2008, PHMSA published a Notice of Proposed Rulemaking (NPRM) it developed jointly with FRA, focusing on improving the crashworthiness protection of rail tank cars designed to transport PIH materials. The NPRM,

in part, proposed the expedited replacement of tank cars that are used for the transportation of PIH materials and manufactured before 1989 with non-normalized steel construction.

The FRA respectfully requests NTSB classify this Safety Recommendation as "Closed-Acceptable Alternate Action."

Safety Recommendation R-04-6:

"Validate the predictive model the Federal Railroad Administration is developing to quantify the maximum dynamic forces acting on railroad tank cars under accident conditions."

The FRA, through the Volpe National Transportation Systems Center (Volpe), has worked over the last several years to validate its predictive model designed to quantify the maximum dynamic forces acting on railroad tank cars under accident conditions. The final research report prepared by Volpe was recently published. A copy of that report is enclosed. FRA will use that research to determine the appropriate course of action. Although FRA has successfully validated its predictive model, DOT recognizes NTSB's recommendations made in response to the NPRM that DOT develop and validate more technically rigorous models. DOT understands NTSB's concerns in this regard, and as we pursue continued research and development on advanced car design, we will continue to further refine our quantification of the dynamic forces acting on railroad tank cars through additional modeling efforts and, if appropriate, full-scale testing.

The FRA respectfully requests NTSB classify this Safety Recommendation as "Closed-Acceptable Action."

Safety Recommendation R-04-7

"Develop and implement tank car design-specific fracture toughness standards, such as a minimum average Charpy value, for steels and other materials of construction for pressure tank cars used for the transportation of U.S. Department of Transportation Class 2 hazardous materials, including those in "low-temperature" service. The performance criteria must apply to the material orientation with the minimum impact resistance and take into account the entire range of operating temperatures of the tank car."

Field testing has been completed. The FRA and Volpe team presented a series of reports on the field testing (modeling research) at the American Society of Mechanical Engineers conference in Chicago on September 11, 2007. As noted in R-04-06, the final research report prepared by Volpe was recently published. FRA plans to use that research to determine the appropriate course of action. FRA has preliminarily concluded that the results of the dynamic fracture toughness testing do not demonstrate that a workable steel specification could be developed. However, FRA is continuing to examine the dynamic fracture toughness of steels used in the construction of hazardous materials tank cars.

The FRA respectfully requests NTSB classify this Safety Recommendation as "Open-Acceptable Response."

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Safety Recommendation R-05-16

"Require railroads to implement operating measures, such as positioning tank cars toward the rear of trains and reducing speeds through populated areas, to minimize impact forces from accidents and reduce the vulnerability of tank cars transporting chlorine, anhydrous ammonia, and other liquefied gases designated as poisonous by inhalation."

In a final rule published January 13, 2009, DOT imposed a 50 mph speed limit on all loaded railroad tank cars transporting PIH materials. Although this requirement does not implement recommendation R-05-16 in its entirety, DOT believes that this speed restriction achieves the goal of the recommendation as far as possible without introducing additional safety risks and an extreme economic burden on industry.

The FRA respectfully requests NTSB classify this Safety Recommendation as "Closed-Reconsidered."

Safety Recommendation R-05-17

"Determine the most effective methods of providing emergency escape breathing apparatus for all crewmembers on freight trains carrying hazardous materials that would pose an inhalation hazard in the event of unintentional release, and then require railroads to provide these breathing apparatus to their crewmembers along with appropriate training."

On October 16, 2008, the Rail Safety Improvement Act of 2008 (RSIA) was enacted. Section 413 of RSIA mandates that the Secretary of Transportation prescribe a rule by April 16, 2010, that would require, inter alia, that railroads provide certain emergency escape breathing apparatuses for all crewmembers in the locomotive cabs of freight trains carrying hazardous materials that pose an inhalation hazard. FRA has developed an initial draft regulatory proposal that is being reviewed and refined for publication later this year.

The FRA respectfully requests that the NTSB classify this Safety Recommendation as "Open-Acceptable Response."

Safety Recommendation R-07-2:

"Assist PHMSA in developing regulations to require that railroads immediately provide to emergency responders accurate, real-time information regarding the identity and location of all hazardous materials on a train."

AAR amended its recommended operating practices Circular Number OT-55G to afford local emergency responders with a ranked listing of the top 25 hazardous materials being transported by rail through their community. In July 2005, CSX Transportation (CSXT) and Chemtrec entered into an agreement to implement a pilot project designed so that Chemtrec could immediately access specific train information, which included hazardous materials documentation from CSXT's computer system. In December 2006, the American Short Line

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and Regional Railroad Association launched a second pilot project to evaluate the use of Railline Corporation's FreightScope. The system is installed at Chemtrec and has improved availability and rapid deployment of real-time hazardous materials information about shipments on shortline and regional railroads.

In October 2007, FRA sent an initial recommendation response letter to NTSB requesting this recommendation be reclassified as "Open-Acceptable Action." FRA is awaiting a formal response from NTSB.

The FRA respectfully requests NTSB classify this Safety Recommendation as "Open-Response Received," until such time as NTSB staff and Board members have determined a classification based upon FRA's initial recommendation response letter.

Safety Recommendation R-08-13

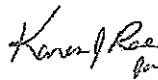
"With FRA's assistance, evaluate the risks posed to train crews by unit trains transporting hazardous materials, determine the optimum separation requirements between occupied locomotives and hazardous materials cars, and revise 49 Code of Federal Regulations Section 174.85 accordingly."

In your May 12, 2009, letter, the NTSB stated: "Without sufficient validation of the one-car buffer standard, the current regulations for the separation of hazardous materials cars from locomotives and their interpretation by the FRA, PHMSA, and the railroads create different levels of protection from hazardous materials for crews on board unit trains and general freight trains." FRA agrees with the NTSB that this is a difficult issue to resolve. A safety analysis may either validate the current regulatory standards or provide the tools to develop more appropriate standards for optimum separation.

We will work with PHMSA to carry out NTSB's Recommendation R-08-13 and provide periodic updates to the NTSB accordingly. PHMSA and FRA are preparing to initiate a research project to study the effectiveness of using buffer cars to separate the crew from hazardous materials cars in unit trains used for transporting hazardous materials. Pending the outcome of the study, FRA will work with PHMSA to initiate a rulemaking that clarifies and revises the current requirements of the HMR related to the use of buffer cars.

The FRA respectfully requests NTSB classify Safety Recommendation R-08-13 as "Open-Acceptable Response."

Sincerely,



Joseph C. Szabo
Administrator

Enclosure

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U.S. Department
of Transportation
**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Ave., S.E.
Washington, DC 20590

JUL 31 2007

The Honorable Mark V. Rosenker
Chairman
National Transportation Safety Board
490 L'Enfant Plaza East, S.W.
Washington, DC 20594

Dear Chairman Rosenker:

The enclosed document provides a brief update on the status of open hazardous materials and pipeline safety recommendations to the Pipeline and Hazardous Materials Safety Administration (PHMSA). PHMSA takes all recommendations given by the National Transportation Safety Board seriously and is working diligently to address them. PHMSA will send you individual responses during fiscal year 2007, either seeking closure or providing further updates on several recommendations.

If you have any questions, concerns, or comments, please feel free to contact me at (202) 366-4433.

Sincerely,

Stacey L. Gerard
Assistant Administrator/Chief Safety Officer

Enclosures

**PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION
(PHMSA)
STATUS OF OPEN NATIONAL TRANSPORTATION SAFETY BOARD (NTSB)
RECOMMENDATIONS**

PIPELINE SAFETY RECOMMENDATIONS

P-90-29: The NTSB recommended that PHMSA develop and implement, with the assistance of Minerals Management Service, the U.S. Coast Guard, and the U.S. Army Corps of Engineers, effective methods and requirements to bury, protect, and inspect the burial depth of submerged pipelines in areas subject to damage by surface vessels and their operations.

PHMSA Update: In 2004, PHMSA published a final rule requiring periodic underwater inspection on August 10, 2004. PHMSA submitted a letter to NTSB requesting closure. NTSB responded by encouraging PHMSA to conduct further studies on risks associated with offshore areas. PHMSA recently completed a study on the risks of exposed pipelines and possible hazards to navigation in offshore waters other than the Gulf of Mexico and its inlets. The results show 58 reported instances of a vessel or its equipment striking a pipeline offshore since 1990. All incidents were in the Gulf of Mexico, where regulation requires the periodic underwater inspections program. On April 30, PHMSA issued a 30-day notice seeking public comment on the adequacy of the study and received no comments. We will submit a closure letter to the NTSB within the next 60-90 days.

P-98-02: The NTSB recommended that PHMSA determine the extent of the susceptibility to premature brittle-like cracking of older plastic piping that remains in use for gas service nationwide.

PHMSA Update: The Plastic Pipe Database Committee includes representatives from PHMSA, NTSB, American Gas Association, American Public Gas Association, Plastics Pipe Institute, Gas Research Institute, industry, and State regulators. The committee recently completed collecting data for in-service plastic piping material failures, and is now creating a table documenting the results. The committee plans to complete this table by April 2007. Additionally, the Gas Distribution Integrity Management Program Report found need for the American Society for Testing and Materials (ASTM) to consider enhancing performance testing for plastic pipe fittings. ASTM is currently addressing these issues. PHMSA plans to seek comments on some plastic pipe issues in its gas distribution integrity management rulemaking, which it plans to issue this fall. PHMSA has developed an advisory bulletin to address vintage plastic pipes that it plans to issue later this summer.

P-99-12: The NTSB recommended that PHMSA establish within 2 years scientifically based hours-of-service regulations that set limits on hours of service provide predictable work and rest schedules, and consider circadian rhythms and human sleep and rest requirements.

PHMSA Update: PHMSA continues its assessment of human fatigue in pipeline operations in various research and standards efforts. PHMSA earlier issued an advisory bulletin (70 FR

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46917) to owners and operators of natural gas and hazardous liquid pipelines and liquefied natural gas facilities. The purpose of the advisory was to help operators ensure controllers are not assigned to shift duties while fatigued, to advise pipeline operators on considerations which could cause a reduction of mental alertness or decision making ability, and to encourage safe management practices. PHMSA also recently completed a controller certification project (CCERT) that covered a variety of human factor control room issues, including fatigue. In a January 2007 report to Congress on CCERT, PHMSA identified shift length, schedule rotation, and education in fatigue mitigation strategies as fruitful areas for addressing fatigue. The Pipeline Inspection, Protection, Enforcement, and Safety Act of 2006 (PIPES Act) requires regulations for each operator of a gas or hazardous liquid pipeline to develop and submit a plan to reduce pipeline system risk associated with human factors, including fatigue. The Act also requires PHMSA to amend its forms for operators to report gas and hazardous liquid pipeline accidents by December 31, 2007. PHMSA is working with the Department's Human Factors Coordinating Committee on a holistic approach to addressing fatigue issues throughout the workforce. We plan to include this approach within our developing "Prevention Through People" regulatory initiative. This regulatory initiative also will address NTSB Recommendations P-05-01-03, which is one of PHMSA's Top 10 regulatory initiatives. PHMSA held a workshop on May 23, 2007 that addressed best practices in this area. PHMSA is currently reviewing the workshop data and plans to issue a rulemaking proposal later this year.

P-01-02: The NTSB recommended that PHMSA require excess flow valve installation in all new and renewed gas service lines, regardless of a customer's classification, when the operating conditions are compatible with readily available valves.

PHMSA Update: The PIPES Act requires PHMSA to prescribe minimum distribution integrity management standards by December 31, 2007. The Act also includes a requirement for gas distribution operators to install EFVs on lines serving single-family residences installed or entirely replaced beginning June 1, 2008. This is another one of PHMSA's Top 10 regulatory initiatives. PHMSA has developed an NPRM, which we plan to issue this fall. This distribution integrity management NPRM will include mandatory installation of EFV on new or replaced service lines on single residents as specified by the Act and recommended by NTSB.

P-03-01: The NTSB recommended that PHMSA revise 49 Code of Federal Regulations Part 192 to require that new or replaced pipelines be designed and constructed with features to mitigate internal corrosion. At a minimum, such pipelines should (1) be configured to reduce the opportunity for liquids to accumulate, (2) be equipped with effective liquid removal features, and (3) be able to accommodate corrosion monitoring devices at locations with the greatest potential for internal corrosion.

PHMSA Update: PHMSA published an NPRM on December 15, 2005 (70 FR 74262). The Notice proposed a performance-based requirement to design and construct pipelines with internal corrosion in mind. The Technical Pipeline Safety Standards Committees held a public meeting June 26-28, 2006 to discuss this issue. On August 24, 2006 the Technical Pipeline Safety Standards Committees voted to support the Internal Corrosion for Natural

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Gas Transmission Lines NPRM. PHMSA issued a final rule directly addressing NTSB concerns on April 23, 2007 (72 FR 20055), and is requesting closure of this recommendation.

P-04-01-03: The NTSB made the following three recommendations regarding transportation of pipe:

1. Remove the exemption in 49 *Code of Federal Regulations* § 192.65 (b) that permits pipe to be placed in natural gas service after pressure testing when the pipe can not be verified to have been transported in accordance with the American Petroleum Institute's (API) recommended practice RP 5L1.
2. Amend 49 *Code of Federal Regulations* to require that natural gas pipeline operators (Part 192) and hazardous liquid pipeline operators (Part 195) follow the American Petroleum Institute's (API) recommended practice RP 5LW for transportation of pipe on marine vessels.
3. Evaluate the need for a truck transportation standard to prevent damage to pipe, and, if needed, develop the standard and incorporate it in 49 *Code of Federal Regulations* Parts 192 and 195 for both natural gas and hazardous liquid line pipe.

PHMSA Update: PHMSA intends to address incorporating API RP 5LW in its miscellaneous amendments proposal, which it plans to issue late this year. The Pipeline Research Council International (PRCI) is conducting research on the impact truck transportation of pipe. PRCI has a working draft which they are expected to complete by the end of 2007. Since it now appears that PRCI's work will not address rail transportation of gas pipelines, PHMSA is considering publishing a notice seeking information of the existing inventions of pre-1970 pipe being kept for repairs.

P-05-01-05: The NTSB made the following five recommendations on Control Room Management:

1. Require operators of hazardous liquid pipelines to follow the American Petroleum Institute's Recommended Practice 1165 for the use of graphics on the Supervisory Control and Data Acquisition (SCADA) screens;
2. Require pipeline companies to have a policy for the review/audit of alarms;
3. Require controller training to include simulator or non-computerized simulations for controller recognition of abnormal operating conditions, in particular, leak events;
4. Change the liquid accident reporting form (PHMSA F 7000-1) and require operators to provide data related to controller fatigue; and
5. Require operators to install computer-based leak detection systems on all lines unless engineering analysis determines that such a system is not necessary.

PHMSA Update: PHMSA has completed our CCERT project, discussed above in response to P-99-12, which covered various human factor control room issues. In January 2007, PHMSA submitted a report to Congress on the project that identified several areas for enhancing safety including improved graphics on SCADA screens, alarms, and training. The Pipeline Inspection, Protection, Enforcement, and Safety Act of 2006 (Act) requires PHMSA to issue regulations by June 1, 2008 that require operators to use the American Petroleum Institute's Recommended Practice 1165, to review and audit alarm systems, and to develop training standards that include the recognition of abnormal operating conditions. The Act

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also requires PHMSA to submit a report to Congress on leak detection systems used by operators of hazardous liquid pipelines by December 31, 2007. We are actively working on this report and intend to meet this deadline. PHMSA plans to include control room issues in a "Prevention Through People" regulatory effort that will incorporate the concepts of integrity management programs into risk-based regulations addressing human factors. PHMSA has begun work on this regulatory effort and expects to complete it this year. It will address both the Congressional direction and NTSB recommendations on use of graphics, review of alarms, controlling training, and fatigue. On May 23, 2007 PHMSA held a public workshop that addressed best practices in addressing fatigue, man-machine interface, and qualifications and training and we are currently reviewing the workshop data. PHMSA has also begun work on a project to add data elements to accident reporting forms to capture information regarding the impact of fatigue on safety. PHMSA has consistently pushed the hazardous liquid operators through integrity management to shore up the adequacy of their leak detection capabilities.

**PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION
(PHMSA)
STATUS OF OPEN NATIONAL TRANSPORTATION SAFETY BOARD (NTSB)
RECOMMENDATIONS**

HAZARDOUS MATERIALS RECOMMENDATIONS

A-99-80: In cooperation with FAA, evaluate the fire hazards posed by lithium batteries in an air transportation environment and require that appropriate safety measures be taken to protect aircraft and occupants. The evaluation should consider the testing requirements for lithium batteries in the United Nations' Transport of Dangerous Goods Manual of Tests and Criteria, the involvement of packages containing large quantities of tightly packed batteries in a cargo compartment fire, and the possible exposure of batteries to rough handling in an air transportation environment, including being crushed or abraded open.

A-99-82: Require packages containing lithium batteries to be identified as hazardous materials, including appropriate marking and labeling of the packages and proper identification in shipping documents, when transported on aircraft.

PHMSA Update: In December 2004, we issued an interim final rule (IFR) to ban the transportation of primary or non-rechargeable lithium batteries as cargo on passenger aircraft. In addition, in a notice of proposed rulemaking published in April 2002, we proposed to tighten other standards for the testing, handling, and packaging of lithium batteries, in each case to reduce the likelihood or consequence of a lithium battery-related fire in transportation. We hope to finalize the proposals in the April 2002 NPRM and the provisions of the December 2004 IFR by the end of this year. A final rule to accomplish this was transmitted to OMB for review and approval in early May. We continue to evaluate the fire hazards posed by the transportation of secondary or rechargeable lithium batteries; with FAA, we are currently evaluating a report on this issue prepared by FAA's Technical Center. We are also working with the United Nations Sub-Committee of Experts on the Transport of Dangerous Goods and the International Civil Aviation Organization to develop additional enhanced safety measures for the transportation of lithium batteries.

More generally, we have initiated a comprehensive strategy aimed at reducing the transportation risks posed by batteries of all types. This strategy reflects an approach we call "Enterprise Government" – bringing together public and private sector stakeholders on all sides of an issue to identify and advance governmental and private sector solutions. Together we identified a series of immediate and longer-term actions that participants in this enterprise are taking or will take to enhance safety. These actions will include comprehensive reporting and investigation of battery-related incidents; improved battery, consumer product, and software design; development and implementation of a technical standards agenda; consideration and implementation of improved regulatory standards; focused enforcement; and development and implementation of a public outreach and education campaign. For example, PHMSA is co-hosting a meeting with national standards organizations (UL, IEC, IEBB) on May 24-25, 2007 in Herndon, VA to review current lithium battery standards work

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and stimulate discussions on actions that can be taken to enhance safety. Through an integrated and cooperative approach, we can be most successful in reducing incidents, enhancing safety, and protecting the public.

I-02-01: Develop, with the assistance of the Environmental Protection Agency and Occupational Safety and Health Administration, safety requirements that apply to the loading and unloading of railroad tank cars, highway cargo tanks, and other bulk containers that address the inspection and maintenance of cargo transfer equipment, emergency shutdown measures, and personal protection requirements.

I-02-02: Implement, after the adoption of safety requirements developed in response to Safety Recommendation I-02-1, an oversight program to ensure compliance with these requirements.

R-04-10: In cooperation with the Occupational Safety and Health Administration and the Environmental Protection Agency, develop regulations that require safe operating procedures to be established before hazardous materials are heated in a railroad tank car for unloading; at a minimum, the procedures should include monitoring internal tank pressure and cargo temperature.

PHMSA Update: PHMSA is using an enterprise approach to examine the bulk loading and unloading issue and the range of potential actions to reduce hazardous materials transportation risks. This initiative is based on the increasing realization that bulk loading and unloading poses significant hazardous materials transportation risk. PHMSA has analyzed the risk due to bulk loading and unloading operations over the past decade and has concluded that roughly one quarter to one half of the overall hazardous materials transportation risk may be attributable to loading and unloading operations. That is a basis for our interest in new approaches to the subject.

We are hosting a facilitated technical workshop in June as the next step. The workshop focuses on the role of loading and unloading procedures, including the nature of current requirements and guidelines, the degree of coverage, the opportunity to improve safety with “best practices” or consensus standards, the adequacy of industry proposed strawman operating practices, and the extent of government and industry monitoring and compliance that occurs or should occur. PHMSA has reconsidered the value of a safety advisory notice in response to NTSB recommendation R-04-10 in light of the proposed operating practices and is hopeful publication of the operating practices will have a better safety result. Other topics or approaches to consider in addressing the issue will be solicited. This process may lead to regulatory changes in early 2008.

We are discussing our plans for this workshop with key stakeholders in industry, government, and the emergency response community to determine the proper structure for this activity and the appropriate expertise to include. The workshop will be open to the public and will lead to a process whereby the public has the opportunity to comment on outcomes. Advice is being sought from the Occupational Safety and Health Administration

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and the Environmental Protection Agency on how best to proceed. We are also seeking NTSB participation in and support for this effort.

H-04-023: Require periodic nondestructive testing to be conducted on nurse tanks to identify material flaws that could develop and grow during a tank's service and result in tank failure.

PHMSA Update: PHMSA reviewed the incident data and other information concerning the safety performance of nurse tanks. We agree that additional requirements, including periodic testing, should be considered. PHMSA is currently considering alternatives for specific measures to improve the safety of nurse tanks, including the costs and benefits of such measures. Industry has inspected more than 1,000 tanks for inclusion in the inspection and testing program authorized by a special permit. We plan to meet with the Fertilizer Institute and other stakeholders to discuss the safety problems identified by NTSB and alternatives for addressing those problems.

H-02-23: Modify 49 CFR 173.301 to clearly require that valves, piping, and fittings for cylinders that are horizontally mounted and used to transport hazardous materials are protected from multi-directional forces that are likely to occur during accident, including rollovers.

H-02-24: Require that cylinders that transport hazardous materials and are horizontally mounted on a semi-trailer to be protected from impact with the roadway or terrain to reduce the likelihood of their being fractured and ejected during a rollover accident.

PHMSA Update: In a notice of proposed rulemaking that will be published in April 2007, we will propose to incorporate the requirements of the Compressed Gas Association Technical Bulletin 25 (TB-25 Design Considerations for Tube Trailers) into the HMR. TB-25 defines basic design considerations for tube trailers to maintain structural integrity during handling and transport. Designs must be able to withstand static, dynamic, and thermal loads found during handling and transport. Designs must address the mounting of individual tubes in tube bundles; attachment of tube bundles to the motor vehicle chassis; and accident damage protection for pressure retaining equipment.

H-98-27: Prohibit the carrying of hazardous materials in external piping of cargo tanks, such as loading lines, that may be vulnerable to failure in an accident.

PHMSA Update: On December 30, 2004, the Pipeline and Hazardous Materials Safety Administration (PHMSA) published a notice of proposed rulemaking (NPRM) to prohibit flammable liquids from being transported in unprotected piping on all newly constructed and existing DOT specification cargo tank motor vehicles. On the basis of comments received and additional data and analysis, we concluded further regulation would not produce the level of benefits originally expected and the quantifiable benefits of the proposed regulatory approaches would not justify corresponding costs. Accordingly, on June 7, 2006 PHMSA published a notice withdrawing the December 30, 2004 NPRM and terminating the rulemaking proceeding. Through cooperation, collaboration, and coordination with the cargo tank industry and the major emergency response organizations, PHMSA developed a

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comprehensive national wetlines outreach awareness program to enhance public safety and assist those who respond to transportation emergencies. Our industry outreach efforts are focused on identifying "best practices" for fueling operations, maintenance procedures, and safeguards measures. Working with stakeholders, we will continue to explore ways to refine our current data on the safety performance of vehicles equipped with wetlines. We will also encourage the industry to continue voluntary efforts to develop and implement technologies that will limit the safety risks associated with the transportation of flammable liquids in wetlines.

H-92-1: Provide cargo tank manufacturers specific written guidance about (a) the factors and assumptions that must be considered when calculating the loads on cargo tank rollover protection devices in determining compliance with existing DOT performance standards and (b) acceptable means to shield and protect the top-mounted closure fittings on all bulk liquid cargo tanks.

PHMSA Response: The Truck Trailer Manufacturers has revised Recommended Practice 87-92: "DOT 406, DOT 407 and DOT 412 Cargo Tank Rollover Accident Damage Protection." PHMSA and FMCSA plan to review it and may incorporate it into the hazardous materials regulations. In addition, FMCSA is conducting a study of the causes of tank truck rollovers and measure that could reduce occurrences. A draft report of the study is currently under review by PHMSA and FMCSA. We will work with FMCSA to expedite completion of the study and evaluate alternative regulatory approaches. In addition to assessing the costs and benefits of damage protection devices to protect a cargo tank and its fittings in a rollover accident, we are also considering stability control systems and other methods to prevent rollover accidents from occurring.

R-01-02, 03: With the assistance of the Association of American Railroads (AAR) and the Railway Progress Institute, evaluate the deterioration of pressure relief devices through normal service and then develop inspection criteria to ensure that the pressure relief devices remain functional between regular inspection intervals. Incorporate these inspection criteria into the DOT hazardous materials regulations.

PHMSA Response: AAR established a task force to review and evaluate inspection reports on pressure relief devices. PHMSA will consider regulatory changes once the tank car committee completes its review of the data. In April 2005, language was adopted in the AAR Manual for root cause analysis by the valve manufacturer when cracked pressure relief valve stems or springs are found. The AAR task force has data on over 5,000 pressure relief valve inspections and expects to make recommendations to the AAR Tank Car Committee later this year. We will work with FRA to expedite completion of the AAR analysis and facilitate a decision on regulatory revisions.

R-89-48, 53: Assist and cooperate in amending regulations to require that closure fittings on hazardous materials rail tanks be designed to maintain their integrity in accidents that are typically survivable by the rail tank.

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PHMSA Response: PHMSA, FRA, and the industry continue to work together to implement this recommendation. FRA is reviewing a final research report on structural strength of various tank-car fittings and the need for fitting protection devices to reduce the probability of loss of lading. We will work with FRA to expedite completion of the research project and facilitate a decision on regulatory revisions.

R-92-22, 23: Develop and promulgate requirements for the periodic testing and inspection of rail tank cars that help to ensure the detection of cracks before they expand to critical length by establishing inspection intervals based on the defect size detectable by the inspection method used the stress level, and the crack propagation characteristics of the structural component.

PHMSA Update: PHMSA published a final rule on September 21, 1995, to increase the frequency of required testing and inspections of rail tank cars based on accumulated and average mileage. To address damage tolerance, FRA has sponsored two research projects, currently nearing completion. We will work with FRA to expedite completion of the research projects and facilitate a decision on regulatory revisions.

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The Deputy Secretary of Transportation
WASHINGTON, D.C. 20590

October 16, 2009

The Honorable Deborah A.P. Hersman
Chairman
National Transportation Safety Board
490 L'Enfant Plaza, SW
Washington, DC 20594

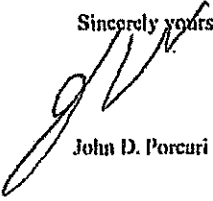
Dear Madam Chairman:

Thank you for your letter summarizing the recommendations the National Transportation Safety Board has issued to the Pipeline and Hazardous Materials Safety Administration (PHMSA) and other modal administrations. Enclosed is a status report on actions we are taking to address the safety issues you have identified.

One item of particular note is the progress we have made on a rule for the loading and unloading of bulk hazardous materials. I have directed PHMSA immediately to begin drafting a notice of proposed rulemaking that addresses the Department's jurisdictional issues with respect to the loading and unloading of hazardous materials when transporting them by cargo tank and rail tank car.

Thank you for providing me with the opportunity to discuss these critical issues with you and your staff. The Secretary and I are committed to working with PHMSA and the modal administrations to address the safety of the transport of hazardous materials.

Sincerely yours,


John D. Porcari

Enclosure

**Pipeline and Hazardous Materials Safety Administration
Actions to Address Outstanding NTSB Recommendations**

Safe Transportation of Lithium Batteries on Aircraft

NTSB Recommendations

A-07-104

Require aircraft operators to implement measures to reduce the risk of primary lithium batteries becoming involved in fires on cargo-only aircraft, such as transporting batteries in fire resistant containers and/or in restricted quantities in any single location on the aircraft.

A-07-105

Until fire suppression systems are required on cargo-only aircraft, as asked for in Safety Recommendation A-07-99, require that cargo shipments of secondary lithium batteries, including those contained in or packed with equipment, be transported in crew-accessible locations where portable fire suppression systems can be used.

A-07-107

Require commercial cargo and passenger operators to report all incidents involving primary and secondary lithium batteries, including those contained in or packed with equipment, that occur either on board or during loading or unloading operations and retain the failed items for evaluation purposes.

A-07-108

Analyze the causes of all thermal failures and fires involving secondary and primary lithium batteries and, based on this analysis, take appropriate action to mitigate any risks determined to be posed by secondary and primary lithium batteries, including those contained in or packed with equipment, on board cargo and passenger aircraft as cargo; checked baggage; or carry-on items.

A-08-001

In collaboration with air carriers, manufacturers of lithium batteries and electronic devices, air travel associations, and other appropriate government and private organizations, establish a process to ensure wider, highly visible, and continuous dissemination of guidance and information to the air-traveling public, including flight crews, about the safe carriage of secondary (rechargeable) lithium batteries or electronic devices containing these batteries on board passenger aircraft.

A-08-002

In collaboration with air carriers, manufacturers of lithium batteries and electronic devices, air travel associations, and other appropriate government and private organizations, establish a process to periodically measure the effectiveness of your efforts to educate the air-traveling public, including flight crews, about the safe carriage of secondary (rechargeable) lithium batteries or electronic devices containing these batteries on board passenger aircraft.

We agree with NTSB that air carriers should be required to report all incidents involving lithium batteries, consistent with Safety Recommendation A-07-107. To this end, on January 14, PHMSA published a final rule under Docket No. HM-215J/HM-224D entitled "Hazardous Materials; Revision to Requirements for the Transportation of Batteries and Battery-Powered Devices; and Harmonization With the United Nations Recommendations, International Maritime Dangerous Goods Code, and International Civil Aviation Organization's Technical Instructions" (74 FR 2200; copy enclosed). In this final rule, we amended the Hazardous Materials Regulations (HMR) to include a comprehensive incident reporting requirement for batteries and battery-powered devices. As specified in the final rule, incidents involving batteries and battery-powered devices that result in a fire, violent rupture, explosion, or dangerous evolution of heat must be reported. In addition to the written incident report, the final rule requires immediate telephonic reporting of incidents involving batteries and battery-powered devices in air transportation.

We agree that an examination of failed batteries and associated electronic devices and equipment will provide valuable data and information as we continue to assess the transportation risks associated with these items. To that end, we are working with FAA and airlines to establish a cooperative program for effectively securing and preserving evidence and passenger information when incidents occur. We developed a standard protocol to be used by aircraft operators in the event of an incident. This protocol includes procedures for: (1) immediate reporting of the incident to DOT; (2) preservation of the batteries and/or electronic equipment that failed and transfer to appropriate authorities for analysis and evaluation; and (3) obtaining relevant information from passengers and crewmembers, including contact information for follow-up interviews as necessary. In addition, we are proposing a regulatory change to require a shipper, carrier, package owner or person reporting an incident to provide upon request by an authorized government representative reasonable assistance in investigating the damaged package or article.

Consistent with Safety Recommendation A-07-108, PHMSA has completed an analysis of the causes of lithium battery incidents (copy enclosed). The data suggest that the most likely causes of lithium battery incidents are:

1. External short circuiting -- occurs when an exposed battery terminal contacts a metal object. When this happens, the battery can heat up and may cause ignition of the battery and/or the surrounding combustible materials.

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2. **In-use situation** — generally relating to improper “charging” and/or “discharging” conditions associated with the use of equipment (e.g., computer or cell phone). This also includes inadvertent activation and subsequent overheating (such was the case when a power drill activated and burned in a passenger’s checked baggage).
3. **Non-compliance** — includes faulty design of the battery (cells or battery packs), false certification of compliance with regulatory testing/classification requirements, and improper packing and handling including some counterfeit batteries.
4. **Internal short circuit** — can be caused by foreign matter introduced into a cell or battery during the manufacturing process. An internal short circuit can also occur when a battery is physically damaged (e.g. dropped or punctured).

PHMSA has initiated a rulemaking project to propose enhanced regulatory requirements to mitigate the risks identified in the incident analysis. The rulemaking is intended to strengthen the current regulatory framework by imposing more effective safeguards, including design testing, packaging, and hazard communication measures for various types and sizes of lithium batteries in specific transportation contexts. PHMSA plans to publish an NPRM this fall. The rulemaking will address the following issues:

- **Elimination of current exceptions for small lithium batteries.** Currently, shipments of small lithium batteries are exempted from certain packaging and hazard communication requirements. Instead, packages must conform to minimum packaging requirements and must be identified as containing lithium batteries for which special procedures should be followed in the event the package is damaged. We are considering eliminating the exceptions for small lithium batteries and imposing more stringent packaging and hazard communication requirements, including shipping papers, package marks and labels, and emergency response information. Elimination of the current exceptions would enhance safety by ensuring that all lithium batteries would be packaged to reduce the possibility of damage to the batteries that could lead to an incident and accompanied by hazard information that would ensure appropriate and careful handling by air carrier personnel and inform transport workers and emergency response personnel of actions to be taken in the event of an emergency.
- **UN design type test results.** Currently, all lithium battery and cell types must be subjected to a series of tests as specified in the UN Manual of Tests and Criteria. The tests are intended to ensure that lithium batteries and cells will withstand conditions encountered during transportation. We are considering adopting a requirement for manufacturers to provide evidence of satisfactory completion of the UN design type tests for each lithium battery and cell that is offered for transportation in commerce. The intended effect would be to enhance compliance with the test requirements.
- **Lithium battery shipping descriptions.** Currently, all types of lithium batteries are transported using the same UN identification number. However, differences in chemistry, functionality and behavior when exposed to a fire are well documented for different types of batteries. The fact that all types of lithium batteries share the same UN

number has the potential to cause significant problems in acceptance procedures for carriers and may unnecessarily hinder or delay the transportation of these products. Thus, we are considering revising the current shipping descriptions to account for different battery types and chemistries and for consistency with shipping descriptions in international transport standards and regulations.

- **Stowage in crew accessible locations.** We are proposing restricting stowage of lithium batteries on an aircraft to crew accessible locations to permit immediate investigation and response to smoke or fire.
- **Recalled batteries.** We are considering the development of appropriate safety measures for the air transport of lithium cells or batteries identified by the manufacturer, the Consumer Product Safety Commission, or the Department of Transportation as being defective for safety reasons, or those that have been damaged or are otherwise being returned to the manufacturer.

PHMSA and FAA also plan to continue to evaluate the risks posed by all types and sizes of lithium batteries with a view towards further risk reduction. Depending on the availability of resources, we plan to address the following areas:

- **Fire behavior.** Test fire behavior of lithium batteries of various sizes and packaging configurations to better understand the transportation risks posed by these batteries and to develop more effective requirements to prevent fires and overheating.
- **Fire resistant containers.** Develop performance standards for fire resistant containers, including fireproof overpacks and ULDs, which can be used for the transportation of lithium cells and batteries of all types on board aircraft.
- **Cargo compartments.** Analyze aircraft cargo compartment configurations and how both current and performance based container designs and their locations may decrease potential risks of fire.
- **Fire detection and suppression.** Analyze possible container internal detection and suppression methods and their effectiveness on the control or containment of lithium battery fires.

We are continuing our efforts to heighten public awareness related to the hazards associated with the air transportation of lithium batteries, including batteries contained in electronic devices. This is a key component of our comprehensive strategy to enhance safety and reduce incidents. Since 2007, PHMSA has been working with air carriers, battery manufacturers, air travel associations, airline pilot and flight crew associations and other government agencies, including the Transportation Security Administration, to educate the public about potential safety problems and measures that will reduce or eliminate those problems. PHMSA agrees that these efforts must be highly visible and continuous to be effective.

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One of our most visible programs to promote battery safety is the SafeTravel Web site, which includes guidance and information on how to travel safely with batteries and battery-powered devices. We have also been working with the major airlines, travel and battery industries to provide SafeTravel information for ticketed passengers and frequent flyers, and place printed battery safety materials in seat pockets on passenger planes. We have recorded several million hits on our SafeTravel Web site. PHMSA continues to maintain and update the SafeTravel website as new information becomes available and is currently in the process of a major revision to the site. TSA includes SafeTravel information and links on its popular public website and FAA has issued Travel Tips and FAQs on Batteries Carried by Airline Passengers with a link to the SafeTravel website.

We are mindful that NTSB stressed actions to promote lithium battery safety awareness among flight crew specifically, and that Recommendation A-08-002 focuses on more robust assessment of passenger and flight crew awareness and behavior. We are working with FAA, ATA, its member airlines, the Airline Pilots Association, and the Association of Flight Attendants (AFA) to raise flight crew awareness of measures they can take to avoid incidents as well as how to respond effectively should an incident occur in the cabin. Thousands of pilots and flight attendant personnel have been trained in how to appropriately respond to and mitigate a fire involving lithium batteries in a passenger aircraft cabin. Additionally, the ICAO Dangerous Goods Panel added the appropriate procedures to the ICAO Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (Red Book).

We have requested available metrics for partner actions, and are coordinating with FAA to continually assess incident data focusing on root causes, in order to gauge any changes in passenger behavior. In the coming year, we will work to capture information about passenger behaviors independent of incidents, and work with FAA and with partners representing airline flight crews to ensure that battery safety and response information is made available. We also will develop a method for evaluating the effectiveness of our efforts to educate the public and flight crews.

Loading and Unloading of Hazardous Materials from Railroad Tank Cars and Highway Cargo Tanks

NTSB Recommendations

I-02-1

Develop, with the assistance of the Environmental Protection Agency (EPA) and Occupational Safety and Health Administration (OSHA), safety requirements that apply to the loading and unloading of railroad tank cars, highway cargo tanks, and other bulk containers that address the inspection and maintenance of cargo transfer equipment, emergency shutdown measures, and personal protection requirements.

I-02-2

Implement, after the adoption of safety requirements developed in response to Safety Recommendation I-02-01, an oversight program to ensure compliance with these requirements.

R-04-10

In cooperation with the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA), develop regulations that require safe operating procedures to be established before hazardous materials are heated in a railroad tank car for unloading; at a minimum, the procedures should include the monitoring of internal tank pressure and cargo temperature.

As PHMSA explained in its January 15 letter to NTSB, on January 4, 2008, PHMSA published a notice reflecting its analysis of incident data and soliciting comments and information on a set of recommended practices for loading and unloading operations involving bulk packagings used to transport hazardous materials. Most commenters to the notice support adoption of procedures governing bulk hazardous materials loading and unloading operations as the best way to enhance the safety of such operations.

Following our review of comments received in response to our January 2008 notice, PHMSA conducted a further in-depth review of serious incident data involving hazardous materials transported by highway and rail in quantities of greater than 3,000 liters during the five-year period from 2003 to 2007. This longer time period captured a larger and more current pool of serious incident data from larger quantity shipments of hazardous materials. We also conducted a qualitative comparative analysis of our proposed recommended practices to the causes summarized in the event descriptions of each serious incident to gauge whether application of the proposed recommended practices may have addressed the incident or enhanced safety of bulk loading and unloading operations.

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Our review of the data suggests that human error is the greatest single primary cause of accidents during, or resulting from, loading and unloading operations accounting for over half of the serious incidents. Much of the human error can be attributed to inattention to detail in performing a loading or unloading function, including failure to follow attendance requirements, leaving valves in open or closed positions, or improperly connecting hoses and other equipment. Defective or deteriorating devices or components (e.g., a valve failure, a gasket leak) as the primary cause accounted for over a quarter of serious incidents and a variety of other causes (e.g., freezing temperatures, lading plugs in piping, lading/vessel incompatibility) accounted for the remainder. The general conclusion of the in-depth review is that the safety of bulk loading and unloading operations can be enhanced through the identification and implementation of measures targeted to reduce accidents resulting from human error.

We have concluded that rulemaking action to address the safety issues we have identified is appropriate. Therefore, PHMSA has formally initiated a rulemaking under Docket No. PHMSA-2007-28119. We will continue to consult with EPA and OSHA as we consider a variety of regulatory alternatives with a view towards the development of enhanced safety requirements for the loading and unloading of railroad tank cars, highway cargo tanks, and other bulk containers that address the inspection and maintenance of cargo transfer equipment, emergency shutdown measures, and personal protection requirements. PHMSA expects to publish a notice of proposed rulemaking (NPRM) by June 2010.

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Elimination of Wetlines on Highway Cargo Tanks

NTSB Recommendation

H-98-027

Prohibit the carrying of hazardous materials in external piping of cargo tanks, such as loading lines that may be vulnerable to failure in an accident.

PHMSA is completing an in-depth, comprehensive review of incident reports and other safety data to determine whether rulemaking action to reduce the risks associated with the transportation of hazardous materials in wetlines is necessary. This review included a detailed examination of incident reports involving cargo tanks transporting flammable liquids to assess the severity of the risk. In addition, we are evaluating the effectiveness of existing or emerging technologies to address the risk and identifying cost-effective strategies to reduce the risk. PHMSA expects to publish an NPRM addressing the recommendation in early 2010.

Fatigue Management in Pipeline Control Centers

NTSB Recommendation

P-99-012

Establish within 2 years scientifically based hours-of-service regulations that set limits on hours of service, provide predictable work and rest schedules, and consider circadian rhythms and human sleep and rest requirements.

PHMSA appreciates and shares the NTSB's elevated interest in fatigue mitigation. PHMSA recognizes the role fatigue management will have in improving pipeline safety and has taken a number of actions to address the issue.

For example, in 2005, PHMSA issued an advisory bulletin titled "Pipeline Safety: Countermeasures to Prevent Human Fatigue in the Control Room" (ADB-05-06), which was designed to provide guidance to pipeline operators on factors that can affect controller fatigue and ensure that controllers are not assigned to duties while fatigued. The advisory bulletin advised operators to (1) limit work schedules to no more than 12 hours in any 24-hour period, (2) develop procedures to manage unusual circumstances in which a controller must work more than 12 hours in a 24-hour period, (3) schedule at least a 10-hour break between work periods, and (4) develop shift rotation practices to minimize fatigue caused by the disruption of normal sleep patterns.

In an NPRM published September 12, 2008, PHMSA proposed to require operators to implement methods to prevent controller fatigue that could inhibit a controller's ability to carry out the roles and responsibilities defined by the operator. In December 2008, working with its Technical Pipeline Safety Standards Committee, PHMSA further refined its approach to controller fatigue regulation. The Committee recommended that operators: (1) establish shift lengths and schedule rotations that provide controllers off-duty time sufficient to acquire 8 hours of continuous sleep; (2) educate controllers and their in fatigue mitigation strategies and ways in which off-duty activities contribute to fatigue; (3) train controllers and supervisors to recognize and mitigate the effects of fatigue; and (4) establish a maximum limit on controller hours of service, which may include an exception during an emergency, with appropriate management approval. PHMSA expects to publish a final rule by the end of 2009. Once the final rule is published, PHMSA will develop inspection guidance and acceptance criteria for fatigue mitigation requirements. In addition, PHMSA will monitor the effectiveness of fatigue mitigation measures through periodic inspections and fatigue data elements on new accident forms.

Premature Brittle-Like Cracking of Plastic Piping

NTSB Recommendation

P-98-002

Determine the extent of the susceptibility to premature brittle-like cracking of older plastic piping that remains in use for gas service nationwide.

In response to NTSB Recommendation P-98-2, PHMSA issued three advisory bulletins on March 11, 1999; November 26, 2002; and September 6, 2007. These advisory bulletins notified operators and states of possible safety problems associated with plastic pipe and alerted operators concerning the need to monitor the pipe's performance and to take necessary action(s) to remedy problems.

In addition, PHMSA is developing new regulatory requirements for pipeline distribution systems under its Distribution Integrity Management Program (DIMP) rulemaking. In an NPRM published June 25, 2008, PHMSA proposed to require all operators to report data on failures that occur in plastic pipe and appurtenances. PHMSA would collect and analyze the failure information and communicate its conclusions to distribution system operators for inclusion in the operators' integrity management programs. Enhanced data collection and analysis will significantly improve operators' ability to identify and address potential integrity issues related to plastic pipe. PHMSA plans to issue a final rule by the end of 2009.

In addition, the Plastic Pipe Database Committee (PPDC), a voluntary group administered by American Gas Association (AGA), monitors in-service performance of plastic pipe. This information is voluntarily submitted and shared only among AGA members, although PPDC includes representatives of PHMSA, states, the American Public Gas Association, and the National Transportation Safety Board. The PPDC has agreed to ask its voluntary participants to allow their names to be included in the quarterly report. This would allow regulators to recognize those operators who have a proactive approach to the data gathering and dissemination critical to the PPDC. The Committee has also consented to expand the scope of the database to collect and report all leaks/failures associated with plastic pipe systems (jurisdictional gathering, transmission, distribution (mains and services)).

Improvements in Railroad Tank Cars Transporting Hazardous Materials

NTSB Recommendations

R-04-004

Conduct a comprehensive analysis to determine the impact resistance of the steels in the shells of pressure tank cars constructed before 1989. At a minimum, the safety analysis should include the results of dynamic fracture toughness tests and/or the results of nondestructive testing techniques that provide information on material ductility and fracture toughness. The data should come from samples of steel from the tank shells from original manufacturing or from a statistically representative sampling of the shells of the pre-1989 pressure tank car fleet.

R-04-005

Based on the results of the Federal Railroad Administration's comprehensive analysis to determine the impact resistance of the steels in the shells of pressure tank cars constructed before 1989, as addressed in Safety Recommendation R-04-4, establish a program to rank those cars according to their risk of catastrophic fracture and separation and implement measures to eliminate or mitigate this risk. This ranking should take into consideration operating temperatures, pressures, and maximum train speeds.

R-04-006

Validate the predictive model the Federal Railroad Administration is developing to quantify the maximum dynamic forces acting on railroad tank cars under accident conditions.

R-04-007

Develop and implement tank car design-specific fracture toughness standards, such as a minimum average Charpy value, for steels and other materials of construction for pressure tank cars used for the transportation of U.S. Department of Transportation class 2 hazardous materials, including those in "low temperature" service. The performance criteria must apply to the material orientation with the minimum impact resistance and take into account the entire range of operating temperatures of the tank car.

R-05-016

Require railroads to implement operating measures, such as positioning tank cars toward the rear of trains and reducing speeds through populated areas, to minimize impact forces from accidents and reduce the vulnerability of tank cars transporting chlorine, anhydrous ammonia, and other liquefied gases designated as poisonous by inhalation.

The Department shares NTSB's concerns regarding the safe transportation of hazardous materials by railroad tank car. FRA's tank car research program continues to focus on the development of effective strategies to maintain tank integrity during train derailments and collisions. As noted in the final rule published by PHMSA on January 13, 2009 pertaining to improving the safety of railroad tank car transportation of hazardous materials (final rule),¹ the Department recognizes that the rule did not directly implement each of the above-identified NTSB recommendations. The Department intended the final rule to be as responsive as possible to NTSB's recommendations related to tank car structural integrity (R-04-04, R-04-05, -04-06 and R-04-07) and operational measures related to the transportation of materials poisonous by inhalation (PIH) (R-05-16). However, as explained in the rule, given available technology, as well as practical and economic considerations, the rule is only the first part of a longer-term strategy to enhance the safety of rail tank car shipments of hazardous materials.

Focusing on PIH materials, FRA's research program is designed (1) to further identify and understand the existing baseline risks associated with the transportation of hazardous material by rail tank car (e.g., how likely is a given tank car to be breached in the event of a collision or derailment), and (2) to determine the effect various regulatory changes underway will have on the identified risks. FRA will use these research results to determine how best to leverage industry and/or government efforts aimed at mitigating the identified risk. Meanwhile, however, FRA continues to focus effort on enhancing the ability to maintain tank integrity during accident conditions by potentially incorporating into tank cars crash energy management features and enhanced top fittings and valve protection.

FRA is an active contributor to the Advanced Tank Car Collaborative Research Project (ATCCRP), a collaborative industry/government effort that is building on the work of the Next Generation Rail Tank Car Project discussed in detail in the preambles to both the NPRM and final rule. The ATCCRP is currently developing the appropriate memoranda of understanding, as well as a five year plan for supportive research.

With regard to NTSB recommendation R-04-04, in August 2008 FRA published a report prepared by Southwest Research Institute (SRI) addressing the impact resistance of steels in the shells of pressure tank cars constructed before 1989 (i.e., cars constructed with non-normalized steel). A CD copy of that report is enclosed. As a result of the findings of SWI's analysis, FRA has not identified a clear trend between chemical, tensile, or Charpy V-notch toughness properties and tank car build dates. Accordingly, at this time, although FRA believes that material properties play an important role in the performance of tank cars subjected to fatigue

¹ 74 Fed. Reg. 1770.

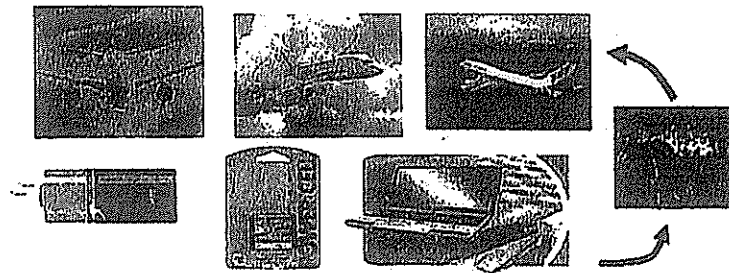
type loading, for overload conditions such as those experienced in collisions or derailments, FRA does not believe that a ranking such as that recommended in R-04-05 will provide a useful tool for improving tank car performance. In addition, recognizing that cars constructed before 1989 utilizing non-normalized steel are reaching the upper limits of their useful lives and the extensive voluntary efforts well underway in industry to phase out these non-normalized steel cars, the Department's final rule requires car owners to prioritize the retirement or removal of pre-1989 non-normalized steel cars. The final rule also adopted the industry standard requiring newly constructed tank cars designed to transport PIH materials to be constructed of normalized steel.

With regard to recommendation R-04-06, as detailed in the preambles to the Department's NPRM published on April 1, 2008, and the final rule, through the Volpe National Transportation Systems Center (Volpe), over the last several years, FRA has worked to validate its predictive model designed to quantify the maximum dynamic forces acting on railroad tank cars under accident conditions. The final research report prepared by Volpe is currently under review within FRA's Office of Research and Development, and once finalized, FRA will use that research to determine the appropriate course of action. Although FRA has successfully validated its predictive model, the Department recognizes NTSB's recommendations made in response to the NPRM that the Department develop and validate more technically rigorous models. The Department understands NTSB's concerns in this regard and as we pursue continued research and development on advanced car design, we will continue to further refine our quantification of the dynamic forces acting on railroad tank cars through additional modeling efforts and, if appropriate, full scale testing.

With regard to recommendation R-04-07, recommending that the Department develop and implement tank car design-specific fracture toughness standards, since June 2005, the Association of American Railroads, in cooperation with FRA, has developed standards that ensure a minimum level of impact resistance for normalized steel and that require that Charpy tests be performed in the orientation of the sample material with the lowest impact property. As explained in the preamble to the final rule, at this time, the results of FRA's dynamic fracture toughness testing does not demonstrate that a workable steel specification could be developed. Accordingly, the Department is continuing to examine the dynamic fracture toughness of steels used in the construction of hazardous materials pressure tank cars and will incorporate any workable tank car design-specific fracture toughness standards into the hazardous materials regulations as appropriate in future rulemakings.

Finally, with regard to recommendation R-05-16 recommending the implementation of operating measures to minimize the impact forces from accidents and reduce the vulnerability of tank cars transporting PIH materials, the Department's final rule imposed a 50 mph speed restriction on all loaded tank cars containing PIH materials. Although we recognize that this requirement does not implement recommendation R-05-16 in its entirety, the Department believes that this speed restriction achieves the goal of the recommendation as far as possible without introducing additional safety risks and an extreme economic burden on industry. Nonetheless, as stated in the preamble to the final rule, the Department is continuing to evaluate the potential of additional sensible operating measures to minimize the impact forces from accident and reduce the vulnerability of PIH tank cars.

Risk Assessment for Aircraft Transportation of Lithium Batteries



September 15, 2009

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Abstract

The Pipeline and Hazardous Materials Safety Administration (PHMSA) completed this analysis in response to recommendations from the National Transportation Safety Board (NTSB) to analyze the causes of thermal failures and fires involving secondary and primary lithium batteries. Data used in this analysis was collected from the Hazardous Materials Information System and the Federal Aviation Administration. The incident data suggests four likely causes of incidents: (1) External short circuiting; (2) Charging/discharging during use; (3) Non-compliance; and (4) Internal short circuiting.

Executive Summary

Lithium batteries fall into one of two basic categories, lithium metal including lithium alloy (aka primary lithium batteries), and lithium ion, including lithium ion polymer (aka secondary lithium batteries). In general, the risks posed by lithium batteries depend on battery size (the amount of lithium content and corresponding energy density) and the likelihood of short circuiting or rupture. The major hazards posed by lithium batteries are (1) electrical, caused by short circuits (both external and internal), and (2) thermal, attributed to the relative instability of the material contained in lithium batteries leading to overheating or fire. Based on an analysis of known incidents and other information we concluded that lithium battery incidents in transportation are likely caused by: (1) External short circuiting, (2) Internal short circuiting (3) Charging/discharging during use, and (4) Non-compliance with applicable regulations. This same incident analysis and other supporting data suggest that lithium battery incidents in normal transportation are a low probability occurrence, but the results of an incident could have significant consequences, particularly in air mode.

The goal of this analysis was to analyze publicly available data to determine the main drivers of transportation risks and provide a practical approach to managing this risk. The analysis also uses non-lithium battery incident information to draw comparisons and show incident trends. We developed several recommendations for managing risk arising from the different categories of incidents. The recommendations focus on:

- Continuing outreach efforts to educate and provide guidance to the air traveling public, including flight crews, about how to safely carry authorized lithium cells or batteries or electronic devices containing such cells or batteries on board aircraft;
- Revising the Hazardous Materials Regulations to require enhanced packaging and hazard communication for the transport of lithium cells, batteries and electronic devices containing lithium cells and batteries;
- Developing improved smoke/fire detection and suppression methods for lithium cells, batteries and electronic devices containing lithium cells and batteries;
- Working with cell, battery and device manufacturers to incorporate robust safety systems that account for consumer use and abuse.

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Introduction

Batteries are woven into the fabric of modern American life. They power portable computers, phones, and audio devices. They make possible motorized wheelchairs and cordless power tools. We as a population have come to depend on batteries to support an increasingly mobile lifestyle. Today's batteries contain more power than ever, making possible a steadily growing number of higher-powered devices on the market. But with that increased power there is greater risk and the need to manage the risk. The Pipeline and Hazardous Materials Safety Administration (PHMSA) working closely with the Federal Aviation Administration (FAA) is addressing the risks posed by lithium batteries in transportation including the incidents that have occurred and the consequences of those incidents. This study focuses on the risk posed by lithium batteries and battery powered devices when transported aboard aircraft as cargo and by passengers and crew members.

In general, the risks posed by lithium batteries are a function of battery size, chemistry and how they are prepared for transport (e.g. properly packaged and protected from short circuit, shock and vibration that may lead to damage that can result in overheating and fire). Lithium batteries present a risk compared to other types of batteries because unlike standard alkaline batteries, most lithium batteries manufactured today contain a flammable electrolyte and have a higher energy density. Lithium batteries can overheat and ignite under certain conditions and, once ignited, can be difficult to extinguish. We have seen lithium battery incidents begin as smoldering fires and propagate unnoticed. This fire behavior and the various packaging and shipping configurations pose significant challenges to managing transportation risks. In addition, although an infrequent event, a lithium battery is susceptible to thermal runaway, a chain reaction leading to a violent release of its stored energy.

An estimated 3.3 billion lithium cells and batteries were transported worldwide in 2008 by all modes of transportation, including passenger and cargo aircraft. This represents an increase of 18 % in volume over 2007. Rechargeable lithium ion batteries comprised nearly 80% of the total lithium battery market. The majority of the lithium ion batteries found their application in cellular phones followed by notebook personal computers (about 75 % of total market for portable lithium ion batteries). As the consumer demand for lithium batteries increases, so does the risk that batteries pose in transportation.

Despite current restrictions and testing requirements applicable to the transport of lithium batteries, and the heightened attention and resources focused on improving safety by regulators and the industry battery incidents continue to occur. Particularly troubling is the fact that these incidents have occurred aboard passenger and cargo aircraft and have involved fire and overheating. Safety advocates including the National Transportation Safety Board (NTSB) and the public are demanding that government agencies more effectively address the risks and reexamine their efforts at risk reduction including evaluation of the current rules concerning lithium batteries. The assessment of the incidents involving the transportation of lithium batteries addressed in this report was based on an analysis of historical air incident data on lithium batteries compiled by the Department of Transportation (DOT).

1.1 Incidents involving lithium batteries

Incidents involving overheating and fires aboard aircraft are a serious concern that must be addressed through effective preventative measures. However, before effective preventative measures can be implemented, it is necessary to understand the root causes of the incidents that have occurred, the potential for incidents in the future and the consequences of such incidents. Sections 1.2 and 1.3 briefly describe the two main sources of incident data available to PHMSA, the HMIS and the FAA data. Incidents meeting the criteria of §§ 171.15 and 171.16 must be reported to PHMSA. PHMSA compiles and stores this incident report information in the Hazardous Materials Information System (HMIS). Information stored in the HMIS includes all modes of transport including air. The FAA compiles incident report data from media sources, reports provided by individual airlines and other sources.

This study examined incident data from 1991 to the present. During that time period we documented 40 lithium battery incidents in the aviation mode worldwide. This amounted to about 2 incidents per year. However, during the period from 1999 to the present we documented approximately 38 incidents resulting in an average of nearly 4 incidents per year. Many factors can explain this increase in incident reports including an increase in the overall volume of shipments, exponential growth of the consumer lithium battery market and the heightened awareness of concerns related to lithium battery incidents. PHMSA actions including public meetings, safety advisories and extensive outreach may have positively impacted the voluntary reporting of incidents particularly in air transport. Recently PHMSA amended the incident reporting requirements to specifically require the reporting of incidents that result in a fire, violent rupture, explosion or dangerous evolution of heat as a direct result of a battery or battery-powered device. Prior to this revision, most incidents involving lithium batteries were exempted from reporting requirements. Since compliance with this revision is not required until January 1, 2010 the full effects of the enhanced reporting requirements may not be fully realized until that date and those required to report have been appropriately educated. These factors suggest that the current trend of increased reporting of lithium battery incidents will continue into the foreseeable future.

1.2 FAA Data

The Federal Aviation Administration (FAA) maintains incident data related to the transportation of batteries by aircraft and published the findings on a publically accessible web page. The FAA data include a date and source of information, the type of battery involved, the device involved if applicable, whether the incident involved a passenger or a cargo aircraft and a brief narrative summary of the incident. Information contained in the narrative reports typically included the type of battery and devices involved, how the incident was discovered, response actions and the apparent cause of the incident.

As of September 10, 2009 107 air incidents involving batteries had been recorded since March 20, 1991. The incidents included those associated with batteries of all types and batteries contained in or packed with devices. Incidents occurred during different

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transportation phases - while the aircraft was in flight or on the ground, and while a truck was en route from and to an aircraft. The 107 incidents consisted of 40 incidents involving lithium batteries, 59 incidents involving non-lithium batteries and 8 incidents involving batteries of unknown types. The chart below shows a break down of incidents by battery and aircraft type.

	Passenger Aircraft		Cargo on Passenger Aircraft	Cargo Aircraft	Unknown Aircraft	Grand Total
	Carry-on	Checked Baggage				
Lithium Batteries	14	3	2	21	0	40
Non-Lithium Batteries	1	15	4	37	2	59
Unknown Battery Type	4	1	0	3	0	8
Total	19	19	6	61	2	107

1.3 HMIS data

In accordance with 49 CFR §§ 171.15 and 171.16, incidents involving unintentional releases of hazardous materials during transportation are required to be reported to the DOT. The HMIS maintains this data for lithium batteries under the UN identification numbers UN3090 and UN3091.

Prior to the year 2004, incidents involving "Battery" and "Consumer commodity" were exempted from this reporting requirement. As indicated previously, lithium-ion batteries were not commonly transported prior to 1991. During the period of years 1995 through 2007, the HMIS data recorded 14 incidents involving lithium batteries and 211 incidents involving non-lithium batteries in the air mode as it related to the transportation phases of in-transit, loading, unloading, and in-transit storage. It is not clear why the HMIS had more incidents of non-lithium batteries than the FAA data despite the exceptions provided in the DOT regulation. Nevertheless, it is not appropriate to compare the number of lithium battery incidents between the FAA data and the HMIS because of the different reporting systems.

1.4 Purpose of this analysis

This report, prepared in partnership with relevant program offices in PHMSA and FAA is intended to better understand the nature of the incidents that have occurred with the ultimate objective of gaining a better understanding of the risks factors and measures that can be taken to reduce risk. This report is intended to:

- Analyze publicly available data of incidents that occurred during transportation of batteries by air;

- Create a path forward for developing informed courses of action for reducing risk and validating the best allocation of resources to achieve these objectives; and
- Identify means of reducing risks posed by the air transportation of batteries.

The HMIS data was not used in the detailed analyses because of the exceptions provided for incidents involving batteries. The FAA incident data was used to assess, to the extent possible, the degree of hazards and consequences as well as some risk measures relevant to air transport of lithium batteries and devices containing lithium batteries. Although the data involving lithium batteries was the primary focus of the analysis, the analysis of the data for non-lithium batteries was also considered primarily because lithium and non-lithium batteries were included in the same dataset and because a substantial portion of the battery incidents occurred during the air transportation of non-lithium batteries.

1.5 Limitation of FAA/HMIS Data

The FAA data was based on information collected from FAA staff reports that in many instances did not involve a formal root cause investigation or was limited due to the absence of evidence, while the HMIS data was based on DOT form F 5800.1 submitted by the carrier who transported the batteries. This data set is limited in its use for the purposes of risk analysis since the data was not originally collected for risk assessment purposes. We acknowledge the difficulties in analyzing empirical incident data due to incomplete and differing reporting requirements and an evolving recognition of the importance of a complete narrative of events. Despite these limitations, various broad conclusions may be drawn from the limited data available. A brief synopsis of the incident data and how the information was used are presented below.

The FAA data provided specific information on the type of battery, devices containing batteries, and aircraft type involved (i.e. cargo or passenger aircraft). However, the narrative portions were not consistent in terminology or of the types of information provided so we were limited in our ability to conduct a thorough analysis aimed at identifying the root causes. For example, a probable cause of the incident was provided in some instances while no causes were indicated in others. Also in a number of reports, the information provided was insufficient to draw specific conclusions. For example, in a number of instances it was not apparent whether the lithium battery(ies) were a non-rechargeable (metal or primary type) or a rechargeable (lithium-ion or secondary type). In other cases, the data provided no clear distinction between lithium and non-lithium batteries. For these reasons, some of the information was deduced from information provided in the narrative portions of the reports. Assumptions were made relative to the probable causes, potential consequences, mitigation actions, condition of the batteries, sizes of the batteries, compliance levels, phases of transportation, exposure and abuse conditions and failure modes.

Nevertheless, the FAA data contained the most inclusive data covering the years 1991 through 2008 for lithium battery incidents that occurred in air transportation relative to other

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publically available data. Even though incidents in air transportation are more likely to be reported, it is not clear whether the reports are inclusive of all the battery incidents that occurred in air transportation or in related phases during these time periods. Many of the incident reports were derived from information voluntarily provided by airline operators or industry representatives, media reports and information provided by other government agencies. Information was not as readily available relative to incidents that occurred on non-US carriers or in countries operating outside of the United States. PHMSA and FAA are working through the International Civil Aviation Organization to raise the awareness of the importance of reporting incidents, collecting evidence and conducting follow up investigations and root cause analyses. Incidents occurring outside the U.S. are not usually reported but we remain hopeful that recent changes to the International Civil Aviation Organization Technical Instructions on the Safe Transport of Dangerous Goods by Air requiring battery incident reports will enhance the available data for addressing risk reduction.

The HMIS data is a compilation of the DOT forms completed by the carrier or person in physical possession of the hazardous material at the time of the incident. The HMIS did not include incident information involving lithium batteries carried by passengers or crewmembers. This might be one of the reasons why the number of the lithium battery incidents reported in the HMIS data was considerably smaller than the number reported in the FAA data.

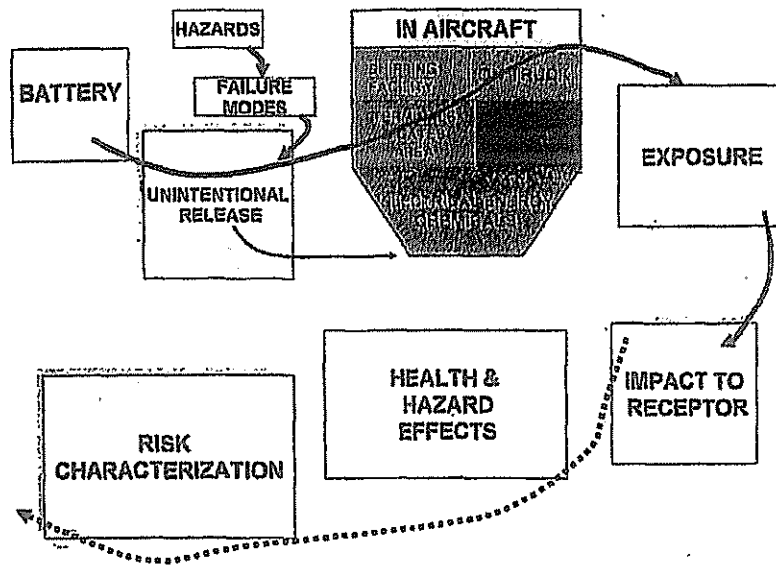
The HMIS data form was designed to cover the incidents resulting from the universe of all hazardous materials in all transportation modes and was not specifically intended to address the battery incidents on aircraft. This form had an entry for lithium battery (UN3090); lithium batteries, contained in equipment (UN3091); and lithium batteries packed with equipment (UN3091), and hence did not identify whether the battery was a lithium ion or metal type.

The HMIS data listed standard entries for "What Failed," "How it Failed," and "Failure Cause." These standard entries were given as part of guidance for completing the form. These entries were not designed for lithium batteries and hence the information relative to battery incidents was not as comprehensive as was desired. For example, the most frequent failure cause for lithium batteries for the period from 1990 through 2007 was "Blank (9 occurrences)," meaning the cause was not identified, followed by Improper Preparation for Transportation/Fire (2 occurrences); Temperature or Heat (2 occurrences); and Loose Closure, Component, or Device (1 occurrence). No information was provided on the type of batteries, energy levels, consequences, etc. let alone information on passenger-carried batteries or devices. The HMIS data in its present form does not provide adequate information for sufficient risk analysis for lithium battery incidents that occur on aircraft.

2. Risk assessment using FAA data

Traditionally, risk assessment involves the process of Hazard Identification, Exposure Assessment, Health Effects Assessment, and Consequence analyses as part of the overall risk characterization. Risk Management is a process that makes use of risk assessment

results in decision making. The illustration provided below was intended to provide a perspective of the flow of analytical components, and some of the risk assessment processes and factors involved. Batteries contain hazardous materials in the form of chemicals and electrical energy. These hazards triggered by failure modes could result in unintentional releases of the chemicals and electrical energy to impact receptors through exposure pathways resulting in negative consequences. Receptors could be battery manufacturers, shippers, carriers, passengers, crew members, cargo handlers, the aircraft or others. There were no reported fatalities associated with direct chemical exposure or reactions from battery incidents based on the available data.



The risk analyses were grouped in three broad categories of components- Hazards Identification, Exposure Assessment, and Consequences (Impacts and Effects). The risk management issues were separately addressed.

2.1 What can be done with the FAA DATA?

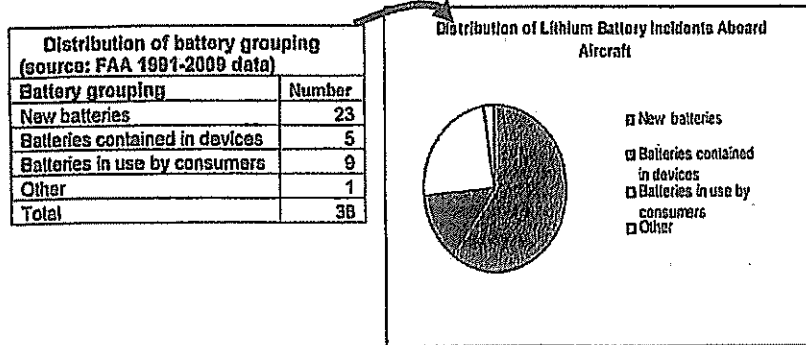
Despite its limitations, the FAA data was most comprehensive data publicly available to carry out data-driven risk assessment for lithium batteries transported aboard passenger and cargo aircraft. The FAA data was used to identify hazards associated with stored electrical energy and release of chemicals contained in batteries, exposure pathways, and consequences. Variables identified in the course of this assessment included lithium

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battery type, battery age, types of devices containing batteries, battery energy levels, interventions applied at the time of incidents, information on offerors, shipment type (consumer or in commerce), and compliance with regulatory standards.

2.2 Risk characterization

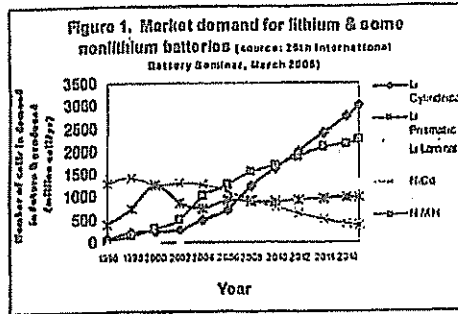
The FAA data showed that lithium batteries involved in incidents comprised about 54 % new batteries, 23 % contained in devices and the remaining 23 % in use by consumers in the course of transportation or incidental to transportation. A graphical representation of these groups is shown below.



The category “New batteries” included batteries shipped from the manufacturer, packages of batteries shipped by consumers via common carriers, and unused or spare batteries carried by consumers in baggage. The category “Batteries contained in devices” included batteries contained in consumer devices carried in cargo compartments or passenger cabins. The category “Batteries in use by consumers” referred to those batteries involved in incidents while consumers were using them in flight or at the airport prior to boarding the aircraft. The category “Other” referred to an incident in which several thousand used batteries were shipped loose in a package.

Industry experts project the market for lithium cells and batteries will continue to grow into the future. Market growth information provided a baseline for assessing risk exposure (i.e. as production grows, so does the amount of batteries in the transportation system.)

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Production data for lithium and non-lithium batteries. The market for non-lithium batteries was projected to flatten or decline as the growth in lithium battery market replaces the non-lithium market. The demand data might be useful in evaluating risk for new battery shipments.

2.2.1 Hazard Identification

2.2.1.1 Failure modes

Failure mode is a structured method of assessing the real cause of the incidents which lead to unintentional release of battery hazards causing exposure to the receptors, and their effect on safety.

The failure modes for lithium battery incidents were grouped in 8 broad categories based on the types of the causes indicated in the FAA data. These were in the order of frequency of occurrences:

1. External-short
2. External or internal short
3. In-use situation
4. Unintentional activation
5. Discharging (not in use, not turned off)
6. Improper handling
7. Malfunctioned
8. Unknown.

When it was not clear as to whether the short-circuiting was due to external or internal short-circuiting, the failure mode was assigned "external or internal short-circuiting."

2.2.1.2 Lithium Battery Type

Lithium batteries are manufactured in a number of different shapes, sizes and utilize various chemistries. Current and future demand for different battery types will revolve around power and capacity demands, charge and discharge characteristics, a desire for a particular shape and portability and reliability. Below are a few of the most common battery geometries.

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• Cylindrical

Cylindrical lithium batteries are made in different sizes (CRs, SRs, 18650 etc.) and have applications in audio visual equipment, communication devices such as cellular phones and personal digital assistants (PDAs), and notebook PC's. As these markets grow, the demand for this type of cells and batteries could accelerate. The 18650 lithium ion cell is currently the most prolific lithium ion cell type available.

• Prismatic

Prismatic lithium batteries refer to any rectangular shaped batteries and are used in many of the same applications as the cylindrical lithium batteries including digital cameras, and other portable applications. Between 2000 and 2007, demand for prismatic lithium batteries exceeded that of any other lithium battery type.

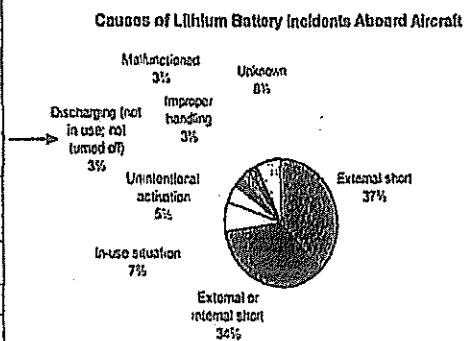
• Laminate

Laminate type batteries allow a large number of electrode terminals to be connected in series. Laminate batteries are typically used in applications requiring a high current and high voltage. These batteries are used in power tools, electrically assisted bicycles, and in development of hybrid automobiles. No laminate type batteries were explicitly reported as having been involved in the incidents as they related to aircraft transportation so far.

2.2.1.3 Failure rates

Table 1 below shows failure rates of lithium batteries by various causes and indicates that the highest rate is attributable to short-circuiting caused by various reasons.

Failure Modes	Number	Frequency (%) =
External short	15	37
External or internal short	14	34
In-use situation	3	7
Unintentional activation	2	5
Discharging (not in use; not turned off)	1	3
Improper handling	1	3
Malfunctioned	1	3
Unknown	3	8
Grand Total	40	100

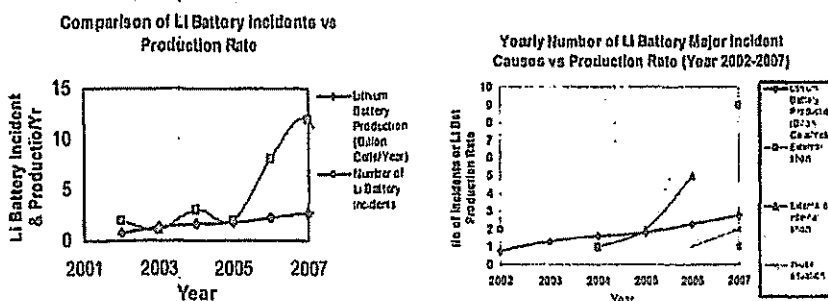


Lithium batteries have various applications including notebook personal computers, cellular phones, portable tools, digital cameras, personal digital assistants, etc. Each of the batteries

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used in these devices is comprised of one or more component cells. The number of cells and the configuration of cells often changes depending on the application. As we stated earlier, notebook computers and cellular phones make up the largest segment of the lithium ion battery market. On average a notebook personal computer uses between 5 and 7 cells per battery pack, while a cellular phone might use an average of about two cells per battery pack. Based on about 2.8 billion cells produced in the year 2007, it was estimated that about 1.8 billion cells were transported by air which resulted in a total of 640 million battery packs transported by air. The 12 lithium battery incidents in the year 2007 translated to roughly 2 transport incidents per 100 million cells produced.

The following charts compare the lithium battery incidents with production rate.



As illustrated by the graph on the left, the number of documented lithium battery incidents significantly increased in between 2005-2007. The incident rate was compared to the production rate of lithium cells during the same time period. Though the number of incidents increased faster than the production rate, the small number of incidents made it difficult to draw any conclusion about a causal relationship between production rates and incident trends.

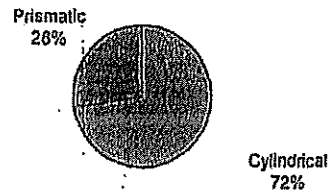
The graph on the right displays a plot of the number of incidents associated with various general causes including: "External short," "External or internal short" and "In-use situation." The discontinuity observed in the graphical representation of incident rates is attributed to the fact that we did not observe a lithium battery incident involving that particular cause during that year. However, the data do reveal some trends. The sharp increases in the incidents between 2005 and 2007 were mainly attributed to the categories of "external short-circuiting" and "external and internal short-circuiting." Again, this observation was based on limited data comprising only the years 2002 to 2007. Nevertheless, production rate increases could not entirely explain the increased incidents.

The failure rates of lithium batteries are shown for cylindrical and prismatic types (Table 2). Short-circuiting was the predominant failure modes for both types of the battery. About 72 % of the lithium batteries observed in incidents were of the cylindrical type.

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Failure Modes	Lithium Battery Type		Grand Total
	Cylindrical	Prismatic	
External short	14	1	15
External or internal short	8	3	11
In-use situation		3	3
Unknown	3	1	4
Unintentional activation	1	1	2
Discharging (not in use; not turned off)		1	1
Improper handling	2	1	3
Malfunctioned	1		1
Grand Total	29	11	40

Failure Rates by Lithium Battery Type

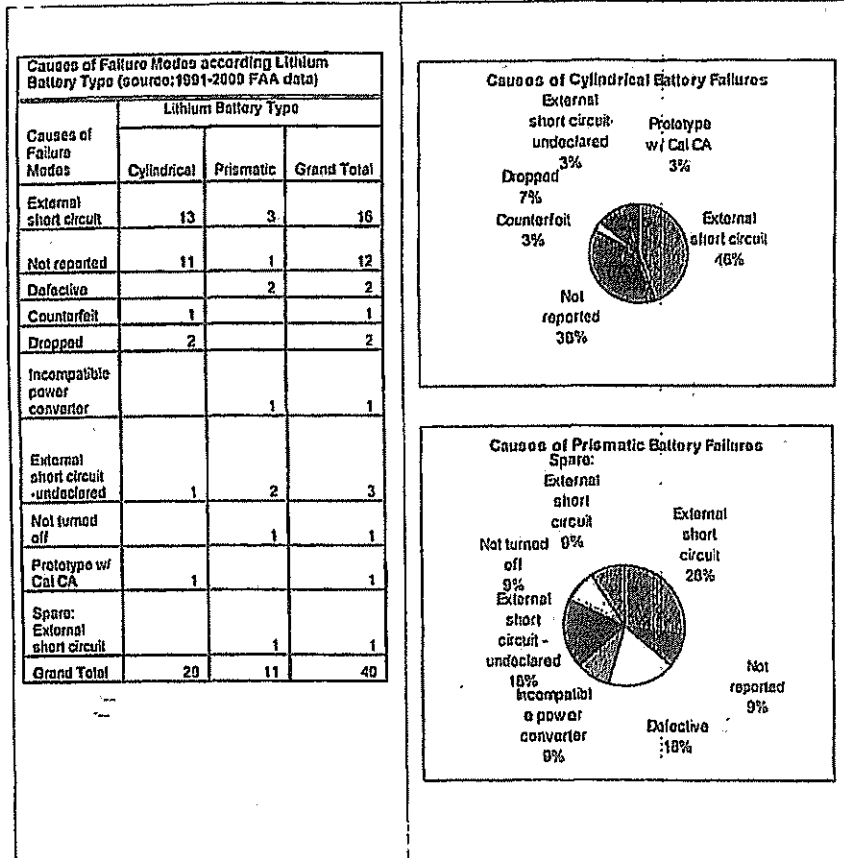


The causes of the failure modes were analyzed. These included electrolyte leakage (only happened to non-lithium batteries), inadequate short circuit protection, defective batteries, and counterfeit batteries. Many causes were not reported in the FAA data.

"Inappropriate short circuit protection included: the packages were not packed correctly; terminals that were improperly insulated or protected; terminal protection features to insulate the terminals were displaced or improperly installed or used. This grouping also included the case where metallic materials such as cables, wire, tools or other metallic objects were placed in the same package and caused short circuits and improper packaging where terminals were exposed to make them prone to short-circuiting.

One incident involved a prototype cylindrical lithium battery. This incident was noted in the table as "Prototype w/ CAA," indicating that the battery was authorized for transportation through a Competent Authority approval but did not comply with the terms of the approval. An enforcement action was taken against the shipper based on a joint PIMSA/FAA investigation.

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Cylindrical batteries were involved in more incidents in these categories. It was interesting to note that Figure 1 showed that the projected demand for the cylindrical type would surpass that for the prismatic type, though the demand for prismatic type has been greater than the cylindrical type during the period that the FAA data was analyzed.

2.2.2 Exposure assessment

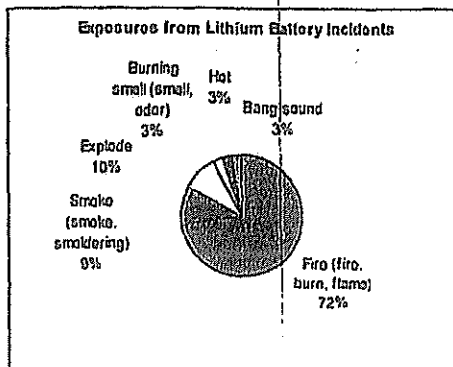
Batteries contain chemicals which are converted to electrical energy. Incidents involving the release of the contents of these batteries can result in explosions, fires, property damage, and damage to an aircraft resulting in a diversion or crash, and other consequences that can have a significant impact.

The narrative descriptions in the FAA incident data described several exposure terms in different ways for similar incidents. When an explosion was accompanied by fire, sparks, or smoke, double counting of exposure was avoided by counting explosion once without counting fire, sparks or smoke. When a fire was accompanied by smoke or odor, only fire was counted to avoid double counting of exposure. On the other hand, when smoke was indicated and fire was not noted in the incident report, only smoke was counted as exposure. The same procedure was followed for other types of exposure. The exposure considered to be more severe in its type was used in counting. "Fire," "burn" and "flame" were combined into one category and reported as "fire." Thus, the severity pecking order used in the exposure assessment was explosion, fire, smell, sparks, hot, and warm.

Fire was expressed in several terms in the data - flame, burning, blaze, ignited, or also as smoldering. Fire could accompany sparks in some cases or was initiated by sparks. However, explosion might not necessarily cause a fire. Explosion was sometimes caused by build-up of gas inside a battery and existence of an ignition source. In some cases, fire was followed by a pop sound and the box lifted-off. In other cases, sparks were noted without a fire. Firefighters included involvement of the fire department or fire fighters, and the airport fire fighters to extinguish the fire.

Table 3. Exposures from Lithium Battery Incidents

EXPOSURES	NUMBER OF TIMES APPEARED	% of Total
Fire (fire, burn, flame)	29	72.6
Smoke (smoke, smoldering)	4	10
Explode	4	10
Burning smell (smell, odor)	1	2.5
Hot	1	2.5
Bang sound	1	2.5
Total	40	100



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Approximately 71% of exposures resulted from lithium battery incidents caused by fire followed by about 11 % which resulted in explosion. Smoke occurred in about 9 % of the incidents (See Table 3.).

2.2.3 Consequences – lithium and non-lithium batteries

Consequence is a direct result of an incident such as fatalities, injuries, persons evacuated, property damage, closing of facilities, and interruption of the flight pattern or routing of an aircraft. Based on the types of the consequences reported in the data, 13 categories of consequences were considered for evaluation. These were injury, aircraft destroyed, packages destroyed, evacuation, bomb squad called in, fire fighters called in, rerouting of aircraft, battery box removed, clothes burned, terminals protected, fined, turned off computer, and emergency responders called in.

The consequences to the extent the data were reported in the data were accounted for and tabulated. The examination of the data showed that not all of the consequences were reported in the inspection reports. For example, the inspection report normally noted the exposure such as fires or smoke or their probable causes such as short circuits, but did not normally elaborate what happened after the incident subsided i.e. no consequences were reported in many cases. It could be that in minor incidents no serious or reportable consequences were observed. This was generally true for small incidents of fires or smoke not requiring the help of fire fighters or emergency responders.

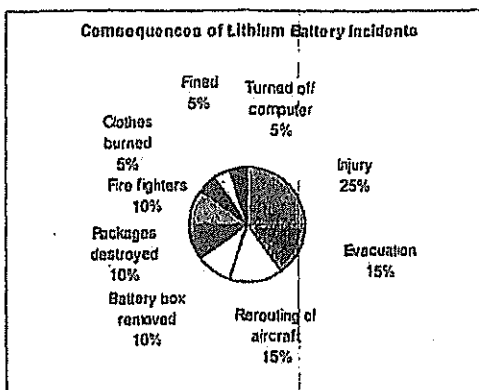
o Lithium Batteries

Though no fatalities were reported in the FAA data as they related to battery incidents, several injuries were reported. "Evacuation" involved evacuation of passengers from the aircraft due to the battery incident. "Rerouting" included an emergency landing at another airport, returning to the original airport for emergency landing, or returning to gate. Boxes or packages containing batteries that were removed from the aircraft or the shipping facility were grouped in the "Battery box removed." "Packages destroyed" included the damaged baggage or packages in addition to packages of batteries and devices containing batteries.

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Table 4. Consequences associated with Lithium Battery Incidents

CONSEQUENCES	NUMBER OF TIMES	%
Injury	5	25
Evacuation	3	15
Rerouting of aircraft	3	15
Battery box removed	2	10
Packages destroyed	2	10
Fire fighters	2	10
Clothes burned	1	5
Fined	1	5
Turned off computer	1	5
Total	20	100



In one case, fire fighters were called in to extinguish the fire. In another case, it was reported that a laptop computer was turned off by the security screener and no other consequences or measures were reported. In about one third of the lithium battery incidents, injury was reported. Not all of the 40 lithium battery incidents reported consequences within the categories listed above. In all, only 18 of the 35 incidents reported consequences.

• **Non-lithium Batteries**

Reported consequences for non-lithium battery incidents were slightly higher than for lithium battery incidents. This might be due to the higher number of incidents reported for non-lithium batteries. The packages were destroyed about 23 % of the time. About 14 % of the non-lithium battery incidents resulted in injuries of the passengers or crew members.

2.3 Risk management

Risk management is an evolutionary process that uses the results of a risk assessment to aid decision making for risk reduction and should be integrated with other management processes. Risk management involves a broad array of disciplines aimed at decision making about control. In addressing various methods available for its control, costs and benefits should be considered. A cost benefit analysis is being developed by PIIMSA and FAA.

2.3.1 Controls that could be taken

Interventions afford opportunities to mitigate the adverse effects resulting from battery incidents. The most appropriate intervention depends on many factors including the type of battery and the location of the battery. Two types of interventions were considered. Specifically, direct and indirect interventions. Direct intervention involved the actions of crew members, control officers and sometimes passengers to mitigate incidents. Indirect intervention involved an evaluation of the causes of an incident to achieve an acceptable outcome in the future. Examples of such indirect interventions include enhanced packaging, package limits, enhanced short circuit protection and improved battery design.

Direct intervention typically involved actions taken after an incident has occurred while indirect interventions would prevent an incident from happening. Since the incident data only provided information about actual transportation incidents, naturally the incident data only provided information on the direct interventions used. Age and configuration of the battery did not appear to affect the type of intervention practiced.

Many of the incidents involving lithium batteries occurred on passenger aircraft in carry-on or checked baggage. These batteries were personal items and may not have been new batteries or batteries that were produced by original equipment manufacturers. Many of these batteries had exposed terminals leading to short-circuits. It was not always possible to determine all of the facts that may have contributed to the incident (e.g. were the batteries defective, abused by the consumer, counterfeited or properly handled and protected from short circuit). In contrast to lithium battery incidents, most incident involving non-spillable batteries occurred on cargo aircraft and were shipped separate from the device it was intended to power.

◦ **Lithium Batteries**

Lithium batteries were grouped in three categories - new batteries, batteries contained in devices; and batteries in use by consumers. The majority of batteries constituted the new battery type comprising about 54 % of the total. The make-up consisted of a mix of batteries shipped in commerce and those shipped as non-commerce commodities.

◦ **New Batteries**

The interventions practiced in the majority of the incidents occurred from the new battery grouping were not reported. The interventions ranged from the use of fire extinguisher to evacuating from the affected area to the removal of damaged box. The types of the new lithium batteries relevant to the interventions practiced were mostly lithium ion batteries. The use of fire extinguishers was commonly practiced to deal with fires.

◦ **Batteries installed in devices**

Batteries installed on devices were also a source of incidents during transportation. Fire extinguishers were mentioned as a fire suppression system used at the time of incidents. Any details about the types of fire extinguishers were not generally given in the inspection reports. An inadvertently turned-on laptop, though not in use, was indicated in the report and was turned off because it was "hot." Many interventions practiced for these types of battery grouping were not reported.

Many of the devices were consumer items consisting of flashlights, personal use items, and battery-driven toys.

• **Non-lithium Batteries**

Non-lithium batteries grouped in three categories shown had incidents consisting of about 73 % new batteries, 25 % batteries contained in devices, and 2 % batteries in use by consumers. "New batteries" mostly consisted of packaged batteries, batteries on pallets, and batteries not installed in devices or used by consumers at the time of the incidents.

Distribution of battery grouping (source: FAA 1991-2008 FAA data)	
Battery grouping	Number
New batteries	43
Batteries contained in devices	15
Batteries in use by consumers	1
Total	59

Most of the incidents involving non-lithium were involved cargo shipments as compared to the shipment of lithium batteries that consisted of a mix of cargo, batteries contained in devices or in use by consumers.

Batteries of unknown types were not included in the grouping of non-lithium batteries.

2.4 Additional information obtained from FAA data

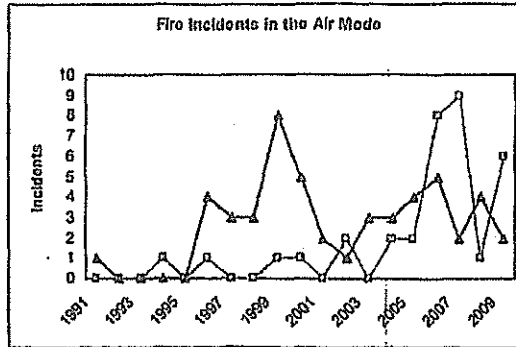
Additional information could be derived from the FAA data. This included change of fire-causing battery incidents over time; type of devices organized based on whether or not they are new or established; percentage of failures for consumer-carried batteries and devices; failure modes for consumer-carried batteries and devices; failure modes according to energy levels for consumer-carried lithium batteries and devices; incidents based on shipment types; and quality control measures that can be used to prevent failure modes. Limitation of space did not permit presentations of all these results. As an example, the trends for fire causing incidents are presented below.

Not all of the incidents resulted in a fire. In the tabulation below, the "fire-causing incident" included fire (burn, flame) and smoke (smoldering) and is shown separately for lithium and non-lithium cells/batteries. The incidents that only led to sparks or leaking of electrolyte were not included in the "fire-causing incidents"

Overall, lithium battery incidents have increased in recent years, while incidents associated with non-lithium batteries have remained relatively constant. Since many of these incidents were caused by external short circuiting, proper insulation and protection of terminals especially for lithium batteries proper packaging could have prevented many of these incidents. Improper handling of packages containing batteries may have contributed to the observed incidents.

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Year	Number of Fire incidents in the Air Mode	
	Lithium	Non-lithium
1991	0	1
1992	0	0
1993	0	0
1994	1	0
1995	0	0
1996	1	4
1997	0	3
1998	0	3
1999	1	8
2000	1	5
2001	0	2
2002	2	1
2003	0	3
2004	2	3
2005	2	4
2006	8	6
2007	9	2
2008	1	4
2009	6	2



Lithium: _____

Non-lithium: _____

3. Summary of findings and recommended actions

o Summary

As of September, 2009, the results can be summarized as follows.

1. 37 % of the observed incidents involved lithium batteries; 55 % were non-lithium batteries; and 7 % unknown types.
2. Increased production could not fully explain the increase in lithium battery incidents observed during the study period.
3. For lithium batteries, the distribution of the causes of incidents was: 37% external short-circuiting; 34 % external or internal short-circuiting; 7 % in-use situation; 5 % unintentional activation; and 17 % from all other causes (discharging- not in use but not turned off, improper handling, malfunctioned, and unknown).
4. For non-lithium batteries, the distribution of the causes of incidents was: 65 % external short-circuiting; 11 % unintentional activation; 5 % external or internal short-circuiting; 4 % improper handling; and 15% others.

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5. For lithium batteries and devices containing lithium batteries, consumer-carried items constituted about 43 % of the battery incidents, the remaining being the bulk shipment in commerce.
6. For non-lithium batteries and devices containing non-lithium batteries, consumer-carried items constituted about 29 % of the battery incidents, the remaining being the bulk shipment in commerce.
7. About 49 % of the lithium battery incidents were from the ion type, about 37 % from the metal type, and the remainder of an unknown type.

◦ Recommendations

DOT's "Battery Safety Action Plan" identified multi-faceted recommendations to reduce battery risks. The action plan was developed through a collaborative effort where PHMSA reached out to numerous entities (e.g. airlines, pilots, flight attendants, battery manufacturers, shippers, etc.) through a number of safety-focused forums. The recommendations provided below are a result of the analysis of the battery incident data and supplement those identified in the "Battery Safety Action Plan" with a direct focus on preventing the specific battery incidents aboard aircraft and during the routine operations based on an analysis of the incident data. Actions identified below that are not covered in the action plan will be considered for revising the action plan.

While this analysis provides a starting point the investigation is far from complete. We continue to observe lithium battery incidents in air transportation and we must collect useful data from the incident scene as soon as possible and determine the root cause of the incident. Data collection and analysis must improve in order to observe useful trends. Individuals investigating the cause of the incident must follow-up with shippers and manufacturers to determine specific causes and ensure corrective actions are taken in the future.

◦ Consumer-carried batteries and devices:

- a. Develop an advisory to educate air travelers relative to the potential for battery failures during device use and charging aboard aircraft.
- b. Develop an outreach plan to raise awareness regarding the need to ensure that battery powered devices are turned off while not in use and that simple measures are taken to prevent inadvertent activation during transport.
- c. Develop an outreach plan to raise awareness concerning the risks associated with the use of inferior or counterfeit batteries and how to identify them.
- d. Develop an outreach program to increase awareness of the hazards of using improper charging equipment.

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- e. Alert air travelers of the hazards associated with carrying unprotected loose batteries and the importance of securely packaging their spares.
- f. Review the packaging requirement for the carriage of spare batteries and for batteries packed with or contained in equipment.

o Cargo Shipments

- a. Review the current battery packaging requirements and consider how enhanced packaging can reduce the risk of fire and overheating and the potential consequences.
- b. Review current requirements for the transport of *Bulk* Shipments of batteries and cells. Consider enhanced regulations to for bulk quantities of batteries and cells including hazard communication and hazmat employee training.
- c. Require manufacturers to be able to produce proof the battery and cell design types have successfully passed the applicable UN tests.
- d. Examine the benefits of requiring batteries to be stowed in crew accessible locations.
- e. Test various packaging and quantity configurations of batteries to better understand the risks and to develop more effective requirements to prevent fires and overheating.
- f. Develop a plan for identifying and prohibiting the transport of defective and counterfeit batteries aboard aircraft.
- g. Continue to work with the international regulatory bodies to develop requirements for addressing and identifying design defects, manufacturing defects, and testing inadequacies.
- h. Amend the design type tests to reduce risk and enhance safety.
- i. Review current requirements for loading and handling of batteries (e.g. preventing damage that results from improper handling)
- j. Examine the adequacy of on-board intervention systems including fire detection and suppression capabilities.
- k. Consider the feasibility and costs of using fire proof overpacks and ULDs consistent with NTSB recommendations.

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U.S. Department
of Transportation
**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Ave., S.E.
Washington, DC 20590

JAN 22 2008

The Honorable Mark V. Rosenker
Chairman
National Transportation Safety Board
490 L'Enfant Plaza, SW
Washington, DC 20594

Dear Chairman Rosenker:

This letter is a follow-up to our correspondence on August 9, concerning Safety Recommendations R-07-4 and R-07-5 issued to the Pipeline and Hazardous Materials Safety Administration (PHMSA). These recommendations were issued following the National Transportation Safety Board's (NTSB) investigation of a rail incident on July 10, 2005, in Anding, Mississippi. The head-on collision of two trains resulted in the derailment of 6 locomotives and 17 rail cars. Seven residue tank cars containing hazardous materials were among the cars that derailed. Approximately 15,000 gallons of diesel fuel were released from the locomotives and resulted in a fire that burned for 15 hours. Two crewmembers were on each train; all four were killed. The recommendations state:

R-07-4

With the assistance of the Federal Railroad Administration (FRA), require that railroads immediately provide to emergency responders accurate, real-time information regarding the identity and location of all hazardous materials on a train.

We agree that timely and accurate information concerning the identity and locations of all hazardous materials on a train is critical to effective emergency response. The Hazardous Materials Regulations (HMR) require railroads to maintain hazardous materials information on-board trains reflecting the position of cars in the train, and hazard information regarding the commodities transported in specific rail cars.

In response to several recent accidents, FRA approached the Association of American Railroads (AAR) to ask for its assistance in developing additional strategies and mechanisms to ensure that detailed and specific hazardous materials information, including the position of cars in the train, is readily available to emergency responders even when crew members are disabled or otherwise unable to contact responders at the scene. FRA conducted two meetings with AAR, various railroads, and emergency response organizations to discuss enhancements to the emergency response system that would ensure emergency responders have access to necessary information during accidents.

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As a result of these meetings and based on a recommendation from FRA, in March 2005, AAR amended its Recommended Operating Practices Circular No. OT-55 G to establish procedures for rail carriers to provide local emergency response agencies with a ranked listing of the top 25 hazardous materials transported by rail through their communities. This information assists emergency responders to plan and train for specific chemical releases.

In addition, in July 2005, CSX Transportation (CSX) and CHEMTREC, the chemical industry's 24-hour emergency response hotline, initiated a pilot project to test improvements to the emergency response communication system. The pilot project allows CHEMTREC to immediately access specific train information, including hazardous materials documentation, from CSX's computer system. The system enables emergency responders to obtain virtually real-time information, either verbally or via electronic means, almost immediately after receiving notification of an incident or accident. The system relies in part on train position information on locomotives equipped with Global Positioning System (GPS) receivers.

In December 2006, CHEMTREC implemented a second pilot project to evaluate the utility for emergency response of Railinc Corporation's Freightscope™ service, which provides a web-based, interactive dashboard of near-real-time rail shipment location information for North America. The Freightscope™ system improved CHEMTREC's ability to provide real-time hazardous materials information about shipments on short line and regional railroads.

Also in 2006, Dow Chemical Company and CHEMTREC began a demonstration project intended to improve the visibility of rail shipments of materials that are poisonous by inhalation (PIH) materials. Dow has equipped about 800 tank cars used to transport PIH materials with GPS hardware and sensors. The sensors are designed to monitor changes to the condition of the dome on the tank car, chemical leaks, and car accelerations and to generate an alert when the sensor is triggered. The alert is sent to CHEMTREC, which then contacts the rail carrier or customer to address the condition identified by the alert.

FRA and PHMSA will continue to monitor the results of these pilot projects and will consider ways to encourage more widespread use of the tested technologies by railroads and emergency response agencies.

In addition to the emergency response demonstration projects, FRA and PHMSA are also examining ways to improve the accident survivability of rail tank cars used to transport PIH materials. We are considering both tank car design and operational factors that affect rail tank car safety and crashworthiness. We expect to publish a notice of proposed rulemaking early in 2008.

R-07-5

Require and verify that States and their communities that receive funds through the Hazardous Materials Emergency Preparedness grant program conduct training exercises and drills with the joint participation of railroads and other transporters of hazardous materials operating within their jurisdictions as a means of evaluating State, regional, and local emergency hazardous materials response plans.

PHMSA's Hazardous Materials Emergency Preparedness (HMEP) grants program provides Federal financial and technical assistance to States, Territories and Indian tribes to "develop, improve, and carry out emergency plans" within the National Response System and the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA, Title III), 42 U.S.C. 11001 et seq. The HMEP grants program is funded by registration fees collected from persons who offer for transportation or transport certain hazardous materials in intrastate, interstate, or foreign commerce. Registration fees fund training and planning grants, monitoring and technical assistance, publication and distribution of the Emergency Response Guidebook (ERG), curriculum development, and staff costs to administer the program.

The planning grants are to be used for: 1) developing, improving, and implementing emergency plans under Title III to include conducting exercises and drills; 2) performing commodity flow studies; and 3) determining the need for regional hazardous material response. Training grants are to be used for training public sector employees to respond safely and efficiently to accidents and incidents involving the transportation of hazardous materials. The HMEP grants program provides grantees considerable flexibility in choosing eligible funding activities, and in reporting their planning, training, and grant use data. This flexibility helps grantees focus on planning and training activities best suited to their needs.

Grantees conducted 1,170 exercises using HMEP grant funds in fiscal year 2006. HMEP grant funds have been used to help fund emergency responders attendance at a Transportation Community Awareness and Emergency Response (TRANSCAER) whistle stop tour and safety train activities in Nebraska in fiscal year 2007. TRANSCAER is a voluntary national outreach effort sponsored by several industry trade associations that focuses on assisting communities prepare for and respond to a possible hazardous material transportation incident. The TRANSCAER whistle stop training tour in Nebraska focused on the production, packaging and shipping of ethanol and provided hands-on training using actual rail and motor carrier equipment. Next year, HMEP grant funds will be used to fund similar activity in Iowa.

In addition, PHMSA staff has participated, and continues to actively participate in TRANCAER program activities nationally. We also provide training and outreach materials for this important outreach initiative. We are exploring additional areas for cooperation. For example, we believe that certain renewable fuels present unique emergency response problems that could be addressed through specialized training and drills. PHMSA continues its close coordination with the Renewable Fuels Association to ensure emergency problems are identified and resolved. PHMSA is also working with the International Association of Fire Chiefs' Hazmat Committee to further explore methods to communicate hazards and identify exercise opportunities.

In response to NTSB recommendations as well as our efforts to better align grantee's performance with our hazardous materials performance goals, PHMSA plans to review a sample of drills and exercises to determine their effectiveness as means of evaluating State, regional, and local emergency hazardous materials response plans. Based upon the findings of the review, PHMSA will then issue guidance and/or rules to address the NTSB recommendations.

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Finally, the National Response Team (NRT) Training and Curriculum Subcommittee, co-chaired by PHMSA and the Federal Emergency Management Agency's United States Fire Administration provides a forum for resolution of interagency hazmat planning and training issues. We placed the issues raised in your recommendation on the Subcommittee agenda and moderated a thorough discussion of the recommendation and possible actions to address it. The NRT Subcommittee will assist PHMSA with reviewing a sample of drills and exercises and is currently considering protocols for local responders to use when working with the rail industry.

Based upon the on-going activities that PHMSA is currently conducting, we request that you classify recommendation R-07-4 and R-07-5 as "Open-Acceptable Action." We thank you for your consideration of our request.

If you have any questions, please contact me at (202) 366-4433.

Sincerely,



Stacey L. Gejard
Assistant Administrator/Chief Safety Officer



U.S. Department
of Transportation
Pipeline and Hazardous Materials
Safety Administration

1200 New Jersey Ave., SE
Washington, DC 20590

NOV 17 2010

The Honorable Deborah Hersman
Chairman
National Transportation Safety Board
490 L'Enfant Plaza SW
Washington DC 20594

Dear Chairman Hersman:

Thank you for your March 17, 2008 correspondence concerning the National Transportation Safety Board (NTSB) Safety Recommendation R-07-05. The recommendation was issued following the NTSB's investigation of the collision of two Canadian National Railway Company freight trains near Anding, Mississippi, on July 10, 2005. The recommendation states:

R-07-05

Require and verify that States and their communities that receive funds through the Hazardous Materials Emergency (HMEP) grant program conduct training exercises and drills with the joint participation of railroads and other transporters of hazardous materials operating within their jurisdictions as a means of evaluating State, regional, and local emergency response plans.

PHMSA can promote, encourage, and authorize funding for specific emergency response planning and training exercises such as the one described above—and we do. But, we cannot direct that States use the funds for a specific exercise. Let me explain.

The Hazardous Materials Transportation Act (HMTA), as modified by the Hazardous Materials Transportation Uniform Safety Act (HMTUSA) of 1990, Section 117A, authorized DOT to make grants available to States, Territories, and Native American Tribes to conduct planning for and training of public sector employees who respond to emergencies (responders).

To achieve these legislated responsibilities, DOT established the HMEP Grant Program. The implementing regulations for the program (49 CFR 110) require states that desire funding to apply to PHMSA and describe how they intend to use the funding. All projects to be funded must fall under an activity eligible for funding. PHMSA approves a state's funding request so long as the projects meet the regulatory criteria. The long standing philosophy of this program is that a state is in a better position than the federal government to determine its needs for emergency response planning and training.

Appendix B

The Safety Board notes PHMSA's agreement that effective emergency response depends on thorough, accurate real-time information, planning and training. PHMSA is examining (1) ways to improve the availability of accurate and immediate information for emergency responders at the scene of an accident and (2) strategies for enhancing emergency response planning and training efforts, including more targeted use of HMEP grant funds. As part of our outreach and our guidance on PHMSA's website, we will encourage states to conduct training exercises and drills with the joint participation of railroads and other transporters of hazardous materials.

PHMSA staff has participated and continues to actively participate in the TRANSCAER program including the whistle stop tour and safety train activities. HMEP grant funds support hazardous materials training offered during this activity. Additionally, training on recognition of the hazardous materials in a train consist is supported by HMEP grants. The Emergency Response Guidebook, published by PHMSA, aids in recognition of hazardous materials and continues to be a first line aid to hazardous materials responders.

The NRT Training and Curriculum Subcommittee co chaired by PHMSA and USFA/FEMA provides a forum for resolution of identified interagency hazmat planning and training issues. Consideration of the points in the NTSB recommendation has been placed on the agenda of the Subcommittee. The subcommittee over the years has facilitated maximum amount of Federal interagency cooperation.

Since the beginning of the HMEP grants program 14,344 exercises (972 in the latest period) have been funded in part using grant funds.

Based on the actions outlined above, we request that Safety Recommendation R-07-05 (2) strategies for enhancing emergency response planning and training efforts, including more targeted use of HMEP grant funds be classified as "Closed – Acceptable Action." We appreciate your consideration of this request.

Sincerely,



Cynthia Douglass
Assistant Administrator/Chief Safety Officer



U.S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration

1200 New Jersey Ave, S.E.
Washington, D.C. 20590

SEP - 1 2009

The Honorable Deborah Hersman
Chairman
National Transportation Safety Board
490 L'Enfant Plaza, SW
Washington, DC 20594

Dear Chairman Hersman:

Thank you for Acting Chairman Rosenker's May 12 correspondence in response to the Pipeline and Hazardous Materials Safety Administration (PHMSA) letter dated August 18, 2008 concerning National Transportation Safety Board's (NTSB) Safety Recommendation R-08-13. The recommendation was issued following the NTSB's investigation of a train derailment on October 20, 2006 in New Brighton, Pennsylvania. In that incident, Norfolk Southern Railway Company (NS) train 68QB119 derailed while crossing the Beaver River railroad bridge. The train consisted of three locomotives, 3 empty freight cars, followed by 80 tank cars loaded with denatured ethanol, a flammable liquid. Twenty-three of the tank cars derailed, twenty of which released ethanol, ignited and burned. The probable cause of the accident was determined to be a broken rail. As a result of this accident, NTSB issued a safety recommendation to PHMSA. The recommendation states:

R-08-13

With the assistance of the Federal Railroad Administration (FRA), evaluate the risks posed to train crews by unit trains transporting hazardous materials, determine the optimum separation requirements between occupied locomotives and hazardous materials cars, and revise 49 Code of Federal Regulations 174.85 accordingly.

In your May 12 letter, the NTSB stated that "Without sufficient validation of the one-car buffer standard, the current regulations for the separation of hazardous materials cars from locomotives and their interpretation by the FRA, PHMSA, and the railroads create different levels of protection from hazardous materials for crews on board unit trains and general freight trains." PHMSA agrees with the NTSB that this is a difficult issue to resolve. A safety analysis may either validate the current regulatory standards, or provide the tools to develop more appropriate standards for optimum separation.

We will work with FRA to carry out NTSB's recommendation R-08-13 and provide periodic updates to the NTSB accordingly. PHMSA and FRA are preparing to initiate a research project to study the effectiveness of using buffer cars to separate the crew from hazardous materials cars in unit trains used for transporting hazardous materials. Pending the outcome of the study

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PHMSA will work with FRA to initiate a rulemaking to clarify and revise the current requirements in Part 174 of the HMR related to the use of buffer cars.

We request that NTSB reclassify this safety recommendation at "Open Acceptable Response" based upon proposed research and analysis. We thank you for your consideration of our request.

Sincerely,

A handwritten signature in black ink, appearing to read "Cynthia Douglass". The signature is fluid and cursive, with the first name being more prominent.

Cynthia Douglass
Acting Deputy Administrator

Appendix B



U.S. Department
of Transportation
**Pipeline and Hazardous
Materials Safety
Administration**

Administrator

1200 New Jersey Ave., S.E.
Washington, DC 20590

JUN 24 2010

The Honorable Deborah A. P. Hersman
Chairman
National Transportation Safety Board
490 L'Enfant Plaza, SW
Washington, DC 20594

Dear Chairman Hersman:

Thank you for your letter of April 26 regarding Safety Recommendation H-98-27, which recommended that the Secretary of Transportation "prohibit the carrying of hazardous materials in external piping of cargo tanks such as loading lines that may be vulnerable to failure in an accident." This recommendation was issued by the National Transportation Safety Board to the U.S. Department of Transportation as a result of the Safety Board's investigation of the collision between a U.S. DOT MC-306 cargo tank semi-trailer and a private passenger car in Yonkers, New York, on October 9, 1997. The collision damaged the cargo tank's loading lines—containing gasoline—resulting in a subsequent fire.

The Pipeline and Hazardous Materials Safety Administration (PHMSA) continues to be concerned with the safety risks associated with the transportation of hazardous materials, including flammable liquids, in external piping (wetlines) of cargo tanks. Previous efforts to publish a final rule prohibiting this practice concluded that the quantifiable benefits accruing from such a prohibition would not justify corresponding costs. However, wetlines incidents continue to occur, such as the Upper Pittsgrove Township, New Jersey incident illustrated in your April 26, 2010, letter. Thus, PHMSA is currently exploring a renewed effort to prohibit the practice of transporting flammable liquids in unprotected wetlines and is now scheduled to publish a notice of proposed rulemaking (NPRM) addressing Safety Recommendation H-98-27 in the fall of 2010.

The PHMSA has completed a comprehensive review of incident reports occurring during the 10-year period from January 1, 1999 to December 31, 2008, which encompassed approximately 6,800 incidents. PHMSA identified 172 incidents during this period in which wetlines were determined to be damaged and/or ruptured, of which 18 incidents involved a fire. Of these incidents, 5 fatalities and 4 injuries resulted directly from the flammable liquid released from wetlines—that is, the fatalities and injuries resulted from a fire rather than blunt force trauma or some other event that would have occurred whether or not the wetlines were damaged. PHMSA also conducted an evaluation of the suitability of a purging system as a cost-effective method for removing flammable liquids from external piping on a cargo tank. Results from our comprehensive review and technology evaluation are being used to support development of a revised cost-benefit analysis for this rulemaking effort. We appreciate your willingness to

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Page 2

The Honorable Deborah A. P. Hersman

reconsider your position on this recommendation upon publication of a NPRM that proposes to prohibit the transportation of flammable liquids in unprotected external piping on a cargo tank.

If I can provide further information or assistance, please feel free to call me.

Regards,

A handwritten signature in black ink, appearing to read 'C. Quarterman', with a long horizontal flourish extending to the right.

Cynthia L. Quarterman

Appendix B



U.S. Department
of Transportation
Pipeline and Hazardous Materials
Safety Administration

1200 New Jersey Ave., SE
Washington, DC 20590

MAY 19 2009

The Honorable Mark Rosenker
Acting Chairman
National Transportation Safety Board
490 L'Enfant Plaza, SW
Washington, DC 20594

Dear Chairman Rosenker:

Thank you for your letter of March 5, which summarizes the National Transportation Safety Boards (NTSB) investigations of three accidents involving mobile acetylene trailers in 2007. The accidents occurred while the vehicles were being prepared for unloading or overturned on public highways. All three accidents resulted in fires. The Pipeline and Hazardous Materials Safety Administration (PHMSA) was pleased to participate in these investigations. The Safety Board recommended that PHMSA:

H-09-01

Modify 49 Code of federal regulation 173.301 to clearly require (1) that cylinders be securely mounted on mobile acetylene trailers and other trailers with manifolded cylinders to reduce the likelihood of cylinders being ejected during an accident and (2) that the cylinder valves, piping, and fittings be protected from multidirectional impact forces that are likely to occur during highway accidents, including rollovers.

H-09-02

Require fail-safe equipment that ensures that operators of mobile acetylene trailers can perform unloading procedures only correctly and in sequence.

As a result of these accidents, on September 6, 2007, PHMSA published a safety advisory for persons who use, operate, fabricate, or otherwise handle mobile acetylene trailers (copy enclosed). The notice discussed recent acetylene incidents; requirements in the Hazardous Materials Regulations; national consensus standards issued by the Compressed Gas Association (CGA) and National Fire Protection Association (NFPA); operating procedures, fire mitigation and detection systems; and training of persons who operate, charge, and discharge mobile acetylene trailer systems. We urged companies and workers to review their operating practices to ensure that filling and discharge operations are conducted in the safest possible manner.

In addition, we worked with CGA to revise CGA publication G-1.6 entitled "Recommended Practices for Mobile Acetylene Trailer Systems." On August 29, 2008, CGA published the

Appendix B

CGA G-1.6, Sixth Edition 2008. Among the major changes included in this edition are provisions to specify that manifolded cylinders must have valve protection that meets the requirements of the Hazardous Materials Regulations and must conform to DOT regulations governing cylinder securement on a trailer; information about installing protective equipment between the acetylene trailer and user's piping system; a provision that the trailer fill station must conform to NFPA 51A, Standard for Acetylene Cylinder Charging plants; and a provision specifying a minimum burst pressure of 500 psig for the flexible transfer hose used for acetylene withdrawal.

We share your concern about the potential safety hazards posed by a fire resulting from the sudden decomposition of acetylene in an accident or during unloading. We met with CGA to discuss NTSB Recommendations H-09-01 and H-09-02. As a result, CGA has undertaken an accelerated revision of CGA publication G-1.6 (Recommended Practices for Mobile Acetylene Trailer Systems) to address the safety issues highlighted in the recommendations. In addition, PHMSA is participating at the International Standard Organization (ISO) in the technical groups responsible for development of new ISO standards (ISO 10961 and 11372) relating to the design, construction, testing, and operation of acetylene cylinder assemblies. We will continue to work with the CGA and ISO to explore all possible options for further improvement of current regulations concerning the transportation and safe operation of acetylene cylinders.

Based on the actions outlined above, we request that Safety Recommendations H-09-01 and H-09-02 be classified as "Open - Acceptable Action." We appreciate your consideration of this request.

Sincerely,



Cynthia Douglass
Acting Deputy Administrator

Enclosure

urbanized area over 200,000 in population (large urbanized area) and two or more urbanized areas under 200,000 in population (small urbanized areas) to separately allocate their operations, operational expense, and fixed guideway data among each of the urbanized areas under 200,000 in population that it serves. Previously, the NTD only accounted for a transit agency servicing one large urbanized area and one small urbanized area. It did not account for a transit agency servicing one large urbanized area and two small urbanized areas. This change will address that oversight, and provide data that can be used for the apportionment of Small Transit Intensive Cities (STIC) Grants, as required by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

Financial Module

FTA proposes to require transit agencies to separate funds that were previously reported as "Other FTA Funds" into different categories for each FTA program. Previously, the NTD required FTA funds only to be reported as either Urbanized Area Formula Funds (section 5307), Capital Program Funds (section 5309), or as Other FTA Funds. The additional categories being proposed by FTA are:

- FTA Metropolitan Planning (section 5303);
- Clean Fuels Program (section 5309);
- Special Needs of Elderly Individuals and Individuals with Disabilities Formula Program (section 5310);
- Other Than Urbanized Area Formula Program (section 5311);
- Jobs Access and Reverse Commute Formula Program (section 5316);
- New Freedom Program (section 5317); and
- Alternative Transportation in Parks and Public Lands (section 5320).

This requirement is designed to improve the NTD's usefulness as a source of information for public transportation planning purposes by providing greater detail as to the sources of funds that are available to transit agencies. Additionally, this requirement is designed to support measurement of performance for the various FTA grant-making programs.

Declarations

FTA proposes to create a standard form for submitting the Chief Executive Officer's (CEO) certification. Previously, CEOs submitted a letter to the NTD as their certification. In prior report years, many transit agencies have submitted CEO certifications that did not conform

to all of the requirements for certification. By creating a standard form, FTA seeks to ensure the uniformity of CEO certifications, and to simplify the CEO certification process for reporters.

Sampling Requirement

FTA proposes, beginning in 2008, to require all transit agencies to conduct a statistical sample of average trip lengths (used for calculating passenger miles traveled) every three years, unless they are a large transit agency that is already required to sample every year. Previously, FTA only required some agencies to sample every five years. FTA proposes to require transit agencies that previously sampled only once every five years to now sample every three years in order to ensure the accuracy of passenger mile data used in the apportionment of funds, particularly in regard to the Small Transit-Intensive Cities (STIC) apportionment. Further, by moving most transit agencies to a single cycle for mandatory sampling, FTA will reduce confusion in regards to sampling requirements. FTA notes that 2008 was already going to be a mandatory sampling year for all transit agencies on both the three year cycle and the five year cycle.

Issued in Washington, DC, this 29th day of August 2007.

James S. Simpson,
Administrator.

[FR Doc. E7-17564 Filed 9-5-07; 8:45 am]
BILLING CODE 4910-57-P

DEPARTMENT OF TRANSPORTATION

Pipeline and Hazardous Materials Safety Administration

[Docket No. PHMSA-2007-29133; Notice No. 07-08]

Safety Advisory Guidance: Use of Mobile Acetylene Trailers

AGENCY: Pipeline and Hazardous Materials Safety Administration (PHMSA).

ACTION: Safety advisory notice; request for comments.

SUMMARY: This safety advisory is addressed to persons involved in the use, operation, fabrication, or other handling of mobile acetylene trailers. In this notice, we discuss recent acetylene incidents, requirements in the Hazardous Materials Regulations, national consensus standards issued by the Compressed Gas Association and National Fire Protection Association, operating procedures, fire mitigation and detection systems, and training of

persons who operate, charge, and discharge mobile acetylene trailer systems. We urge companies and workers to review their operating practices to ensure that filling and discharge operations are conducted in the safest possible manner. In addition, we are requesting information on the effectiveness of current DOT regulations and industry best practices, as well as suggestions for enhancing the safety of these operations.

DATES: Submit comments by November 5, 2007.

ADDRESSES: You may submit comments identified by the docket number (PHMSA-2007-29133) by any of the following methods:

- *Federal eRulemaking Portal:* <http://www.regulations.gov>. Follow the instructions for submitting comments.
- *Web Site:* <http://dms.dot.gov>.

Follow the instructions for submitting comments on the DOT electronic docket site.

- *Fax:* 1 202 493 2251.
- *Mail:* Docket Operations, U.S. Department of Transportation, West Building, Ground Floor, Room W12-140, Routing Symbol M-30, 1200 New Jersey Avenue, SE., Washington, DC 20590.

• *Hand Delivery:* Docket Operations, U.S. Department of Transportation, West Building, Ground Floor, Room W12-140, Routing Symbol M-30, 1200 New Jersey Avenue, SE., Washington, DC 20590 between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Instructions: You must include the agency name and docket number (PHMSA-2007-29133) for this notice at the beginning of your comment. Internet users may access comments received by the Department of Transportation at <http://dms.dot.gov>. Note that comments received may be posted without change to <http://dms.dot.gov> including any personal information provided.

FOR FURTHER INFORMATION CONTACT: Ben Supko, Office of Hazardous Materials Standards, Pipeline and Hazardous Materials Safety Administration, (202) 366-8553, or Charles Hochman, Director, Office of Hazardous Materials Technology, Pipeline and Hazardous Materials Safety Administration, (202) 355-4545.

SUPPLEMENTARY INFORMATION:

I. Background

Acetylene is a highly flammable gas that requires special packaging and handling procedures to be transported safely. Acetylene is regulated as a Division 2.1 flammable gas under the Hazardous Materials Regulations (HMR;

49 CFR parts 171-180) and is subject to stringent packaging and handling requirements. Acetylene is filled and transported in cylinders containing a porous mass and solvent; transportation in bulk containers is prohibited.

In place of bulk packaging, mobile acetylene trailers (MATs) are used to transport large quantities of acetylene. The Compressed Gas Association (CGA) defines a MAT as a group of cylinders, secured together as a unit, mounted on an open transport vehicle, and manifolded for containing and transporting acetylene.

On July 25, 2007, shortly after 9 am, at a Southwest Industrial Gases facility in Dallas, Texas, a MAT delivered by Western International Gas and Cylinders Inc. caught fire while the trailer was being prepared to discharge acetylene to the facility. The origin of the fire has not been identified. Witness reports state that a small fire began at the rear of the trailer and then spread to cylinders in the facility. The fire burned for more than an hour and ruptured a number of cylinders with explosive effects. Three people were injured. The fire caused the closure of local streets and Interstates 30 and 35E for much of the day and destroyed four trailers at the Southwest Industrial Gases facility. Both the Chemical Safety Board (CSB) and National Transportation Safety Board (NTSB) are investigating the incident; PHMSA is assisting with the investigations.

On August 7, 2007, just north of Houston, Texas, outside of the Hughes Christensen Co., a fire started on a MAT delivered by Western International Gas and Cylinders, Inc. None of the cylinders ruptured, and firefighters were able to douse the acetylene cylinders with water and keep the fire confined to the trailer. No one was hurt, but 800 employees were evacuated. NTSB and CSB are also investigating this incident; PHMSA is participating in the investigations.

II. PHMSA Regulations

The HMR specify requirements for the safe transportation of hazardous materials in commerce by rail car, aircraft, vessel, and motor vehicle. The hazardous material regulatory system is a risk management system that is prevention-oriented and focused on identifying a safety or security hazard and reducing the probability of and consequence from a hazardous material release. Under the HMR, hazardous materials are categorized into hazard classes and packing groups based upon the risks they present during transportation. The HMR specify appropriate packaging and handling

requirements for hazardous materials, and require a shipper to communicate the material's hazards through use of shipping papers, package marking and labeling, and vehicle placarding. The HMR also require shippers to provide emergency response information applicable to the specific hazard or hazards of the material being transported. Finally, the HMR mandate training requirements for persons who prepare hazardous materials for shipment or who transport hazardous materials in commerce. The HMR also include operational requirements applicable to each mode of transportation. The HMR apply to each person who offers a hazardous material for transportation in commerce, causes a hazardous material to be transported in commerce, or transports a hazardous material in commerce (see 49 CFR 171.1(b) and (c)).

Under the HMR, acetylene is regulated as a Division 2.1 flammable gas. Acetylene is only authorized for transportation in DOT specification 8 or 8AL cylinders or in UN cylinders conforming to ISO 3807-2 (see 49 CFR 173.303). Transportation of acetylene in bulk packaging, such as cargo tanks, portable tanks, or rail tank cars is prohibited. Section 173.301(f) requires cylinders to be equipped with one or more pressure relief devices sized and selected as to type, location, and quantity, and tested in accordance with CGA S-1.1 and S-7. For acetylene, CGA S-1.1 requires DOT 8 or 8AL cylinders to be fitted with a CG-3 fusible plug, which operates at 212°F. The plug must be proven using the fire test method specified in CGA publication C-12. To ensure the stability of the acetylene during transportation, cylinders are constructed with porous filler and are charged with solvent. The porous filler is typically calcium silicate, and the solvent is typically acetone or dimethylformamide. The amount of solvent and porous filler must be closely monitored to prevent overfilling. Sections 178.59(l)(4)(i) and 178.60(p)(4)(i) establish requirements regarding the amount and porosity of the porous filler and maximum amount of solvent authorized based on the water capacity of DOT 8 and 8AL cylinders.

The HMR permit acetylene cylinders to be manifolded during transportation (see 49 CFR 173.301(g)(1)(iii)). However, the manifolded cylinders must conform to the following conditions: (1) Manifolded branch lines must be sufficiently flexible to prevent damage to the valves; (2) the cylinders must be supported and held together as a unit by structurally adequate means; (3) each cylinder must be equipped with an

individual shutoff valve that is tightly closed in transit and an individual pressure relief device that discharges upward; and (4) the valves and pressure relief devices must be protected from damage by framing, a cabinet, or other method.

The requirements for the transportation of hazardous materials by highway are found in Part 177 of the HMR, including requirements for loading and unloading hazardous materials from highway transport vehicles. When cylinders containing acetylene and other Class 2 gases are transported in commerce, they must be securely restrained in a manner that prevents shifting, overturning, or ejection from the motor vehicle under normal transportation conditions (see 49 CFR 177.840(a)(1)). Normal transportation conditions include vehicle starting, stopping, cornering, accident avoidance, and varied road conditions. We request comments pertaining to the adequacy of current securement requirements for cylinders, including whether existing securement measures would withstand the force of an accident or rollover. Comments should consider the protection from damage afforded to manifolded cylinders by framing, cabinets, or other methods, as required by § 173.301(g)(1)(iii).

Except for cargo tanks and portable tanks, the HMR generally prohibit the discharge or emptying of a package's contents prior to its removal from the motor vehicle (see 49 CFR 177.834(h)). However, this general prohibition does not apply in all circumstances. For example, it has been our longstanding interpretation that the prohibition in § 177.834(h) does not apply to tube trailers, which are 3AX, 3AAX, and 3T cylinders mounted to a transport vehicle, because removing them from the motor vehicle prior to discharging their contents is not practicable. We have long applied the same standard to discharge operations involving manifolded acetylene cylinders that are mounted to a transport vehicle.

III. National Consensus Standards

Several national consensus standards apply to the generation, storage, movement, and use of acetylene. The standards cover filling and discharge operations for acetylene cylinders and the transportation of such cylinders. Persons involved in these operations should thoroughly review these standards to ensure that they are utilizing appropriate safety practices. Below we list and summarize applicable national consensus standards.

A. CGA G-1, Acetylene

This standard, developed by the Compressed Gas Association (CGA), provides general information on the characteristics of acetylene and proper handling procedures. The publication begins by describing the manufacturing process, composition, properties, and the physiological effects of acetylene. It continues by detailing the HMR requirements that apply to shipments of acetylene. It describes authorized packaging, valves, pressure relief devices, filling limits, and hazard communication. In addition, it outlines safe methods for storing acetylene cylinders at a fixed facility location and safe methods for handling and using acetylene. The standard concludes by discussing the type of piping that is suitable for acetylene.

B. NFPA 51A—Standard for Acetylene Cylinder Charging Plants

This standard, published by the National Fire Protection Association (NFPA), establishes safeguards for the design, construction, and installation of acetylene cylinder charging plants. The standard applies to plants that are engaged in the generation and compression of acetylene and charging of cylinders with acetylene. The standard applies to the location, arrangement, construction, design, and development of facilities used in the generation of acetylene and also includes valuable information regarding the charging of manifolded cylinders. In fact, Chapter 10 of the NFPA 51A standard specifically addresses facility-based acetylene cylinder charging manifolds. Though the standard does not provide specific transportation-related information, the safety precautions recommended for facility-based charging stations are very similar to those used to charge MATs, including:

- Charging manifolds must have a shutoff and blowdown valve vented outside or to the low pressure system.
- A check valve must be installed in the facility pipeline at each cylinder charging manifold and lead.
- Pressure gauges must be protected by a device that stops a detonation of flame and limits a rise in pressure.
- Manifold outlets must have a shutoff valve.
- Manifolds must be arranged to limit stress in the cylinder charging leads.
- In order to prevent liquefying of acetylene at low ambient temperatures, specific maximum charging pressures based on ambient air temperature must be followed.
- Cylinder valves must be opened first at the start of charging and closed last at the end of charging.
- Acetylene cylinders connected to charging manifolds must have provisions for cooling by water spray applied from a manually activated spray nozzle system where needed for removing heat from solution acetylene, as determined by ambient temperature and cylinder charging rate.

C. CGA G-1.6, Recommended Practices for Mobile Acetylene Trailer Systems

In this publication, CGA provides safe practices for the design, construction, and operation of MATs. The publication also provides recommended safe practices for auxiliary equipment used in conjunction with MATs, including piping, regulators, flash arrestors, and meters. The standard specifically addresses the following areas:

1. Design and construction (CGA G-1.6, Section 4)

- Trailer must conform to all applicable Federal, state, and local regulations.
- A grounding system for the piping that conforms to NFPA 70, National Electrical Code, must be provided to ground the piping system.
- Piping must: be carbon steel, stainless steel, wrought iron, malleable iron, or copper alloys containing not more than 65% copper; conform to the American National Standard Institute A13.1, Scheme for Identification of Piping Systems; be braced and supported; and meet the appropriate Schedule based on pressure.
- Leads between cylinders and manifolds must be sufficiently long and flexible to minimize strain on valves and leads.
- Manifolds must be equipped with a shut-off valve, pressure gauge, and vent.
- Vents and pressure relief devices must be directed upwards above the acetylene piping.
- Protective equipment must be installed between a MAT and facility piping.
- Cylinders must: conform to the HMR; be vertical, supported, and secured; have valves that are capable of being closed in the event of an emergency; have similar functional characteristics, including dimensions, porous mass, solvent, and solvent quantity; and be arranged in aisles to allow access.

2. Operation (CGA G-1.6 Section 5)

- To be charged, cylinders must conform to applicable HMR requirements.
- Cylinders must be marked in accordance with CGA C-7, "Guide to the Preparation of Precautionary

Labeling and Marking of Compressed Gas Containers."

- In order to prevent liquefying of acetylene, specific maximum charging pressures based on ambient air temperature must be followed.
 - During cylinder charging, valves are to be opened first and closed after the pressure between manifolded cylinders equalizes (takes several hours).
 - Valves must be closed during transportation.
 - Acetylene pressure must be maintained in leads and manifolds during delivery and return shipments.
 - Legible instructions must be posted at the discharge location when consumers use any equipment to discharge the acetylene.
 - The trailer must be chocked or secured to prevent movement during discharge.
 - During any manual valve operations, or when the trailer is being connected or disconnected, a trained person must be in attendance.
 - When acetylene is discharged in an enclosure, appropriate venting to the outside must be used.
 - The flow rate of acetylene for intermittent withdrawal from the trailer must not exceed 10% of the trailer capacity per hour, for continuous withdrawal the flow rate should not exceed 6.6% (1/15) of the trailer capacity per hour.
- ##### 3. Associated equipment (CGA G-1.6, Section 6)
- The trailer discharge station must be in conformance with NFPA 50, "Standard for Bulk Oxygen Systems at Consumer Sites" and be a minimum distance of 50 feet from property lines, bulk flammable liquid storage, and non-acetylene bulk flammable gas storage.
 - The trailer must be a minimum distance of 25 feet from property lines, 50 feet from combustible construction, and 15 feet from non-combustible construction.
 - The trailer site must: Provide adequate space for positioning the trailer and be protected with curbing or guardrails; be not exposed to power, flammable liquid, flammable gas, or oxidizing lines; be equipped with signage stating "ACETYLENE—FLAMMABLE GAS—NO SMOKING—NO OPEN FLAMES"; and have a grounding system for the trailer.
 - Appropriate hoses, meters and electrical equipment must be used.
- ##### 4. General provisions (CGA G-1.6, Section 7)
- MATs must be marked and placarded in accordance the Part 172, Subparts D and F of the HMR.
 - Charging and discharging stations for MATs must be provided with

conspicuously located and easily accessible fire hoses or fixed spray systems and dry chemical fire extinguishers. Nozzles on fire hoses should be of the type that adjusts from full stream to a fog pattern.

- Exits and fire protection equipment may not be blocked or obstructed.

IV. Recommended Practices

The standards summarized above outline specific procedures for filling, discharging, and transporting acetylene cylinders and for storing and using acetylene. Based on our review of the recent incidents and the applicable national consensus standards, we recommend that entities involved in the transportation of acetylene, particularly the filling and discharge of manifolded cylinders mounted on a motor vehicle, implement safety procedures conforming to applicable sections of CGA G-1, "Acetylene (1990), NFPA 51A Standard for Acetylene Charging Plants" (2006 Edition), and CGA G-1.6, "Recommended Practices for Mobile Acetylene Trailer Systems," (1996, Fourth Edition, Reaffirmed 2001). In addition, entities must ensure that acetylene cylinders fully comply with all HMR requirements applicable to the specification cylinder, including cylinder components such as valves, pressure relief devices, porous filler, and solvent.

The CSB Web site provides several examples of best practices to mitigate fires, including the use of fire monitors and water deluge and sprinkler systems. We strongly recommend that entities involved in the transportation of acetylene review the best practices highlighted by CSB and implement those that apply to their operations. In particular, facility operators should consider the installation of fire monitors and water deluge or sprinkler systems. In the event of a cylinder fire, the presence of such fire mitigation systems will help cool the cylinders, reducing the likelihood of additional gas releases, cylinder ruptures, and other potentially catastrophic consequences. For additional information, the CSB's Web site provides best practices based on a Praxair Flammable Gas Cylinder Fire that occurred in St. Louis, MO on June 24, 2005. A safety bulletin and video addressing the Praxair incident can be found at http://www.csb.gov/index.cfm?folder=completed_investigations&page=info&INV_ID=594.

The acetylene accidents covered in this safety advisory notice occurred in conjunction with our assessment of the safety risks associated with bulk loading and unloading operations. On June 14,

2007, we hosted a public workshop to examine industry data, identify industry best practices and standards, discuss the role of recommended practices, and consider industry actions that have the potential to reduce risk during loading and unloading. Representatives from industry, federal agencies, state and local government, standards organizations, the emergency response community, employee groups, environmental and public interest organizations, and the public participated in the meeting. As a result of this collaborative effort between PHMSA and our stakeholders, we developed a set of recommended practices that are generally applicable to loading and unloading operations involving hazardous materials in many different types of packagings and a number of different operational and modal contexts. Consistent with these recommended practices, we recommend that shippers and carriers of acetylene develop and implement specific procedures for loading and unloading operations that are based on an assessment of the safety risks associated with the type of loading or unloading operation being conducted and the material or materials involved. Please consider the following guidelines when developing operating procedures for acetylene:

- (1) Make sure employees know and understand their specific responsibilities during loading and unloading operations, including attendance or monitoring responsibilities.
- (2) Identify and implement appropriate safety precautions, including measures specific to the material transported, such as pressure or temperature controls and maximum filling limits; necessary protective equipment; controlling access to the area where the operations take place; procedures for connecting and disconnecting piping, hoses, and connections; ignition sources; and procedures for monitoring the loading and unloading operations.
- (3) Identify and implement appropriate pre-transfer procedures, including pre-transfer inspections of the transport unit, packaging, transfer area, and piping, hoses, or other connections are free of defects, leaks, or other problems that could result in an unsafe condition.
- (4) Identify and implement appropriate transfer procedures;
- (5) Identify and implement appropriate emergency procedures, including identification of emergency response equipment and individuals authorized in its use; incident response;

use of emergency shut-down systems; and emergency communication and spill reporting.

In addition, we remind entities that offer for transportation or transport acetylene cylinders that their employees must be trained. In accordance with the requirements in Subpart H of Part 172 of the HMR, persons who directly affect hazardous materials transportation safety must complete training that covers the following:

1. *General awareness training* designed to familiarize each employee with the requirements of the HMR and to enable each employee to recognize and identify hazardous materials.
2. *Function-specific training* designed to ensure that each employee understands how he is to perform the functions or operations for which he is responsible. Training for employees responsible for loading or unloading operations should include training on established procedures applicable to such operations, as well as national consensus standards that have been incorporated into such procedures.
3. *Safety training* concerning emergency response information applicable to the specific hazardous material(s) handled, measures to protect the employee from the hazards associated with the materials to which the employee may be exposed in the work place, and methods and procedures for avoiding incidents.
4. *Security training* that provides an awareness of the security risks associated with hazardous materials transportation and methods to enhance transportation security.

We believe that the procedures outlined above, including those contained in the CGA and NFPA standards, combined with a rigorous training program, will ensure that persons responsible for filling, operating, and discharging MATs have the knowledge and information to enable them to conduct these operations safely. We urge shippers and carriers engaged in these operations to evaluate their current operations, review the national consensus standards, and make adjustments in procedures and practices where necessary to minimize the safety risks associated with the transportation of acetylene on MATs.

VI. Enhanced Safety Program for Mobile Acetylene Trailers

We plan to work with acetylene shippers and carriers, emergency responders, associations such as CGA and NFPA, government agencies concerned with the safe handling and use of acetylene, and other stakeholders to assess the effectiveness of current

safety procedures used for filling, operating, and discharging MATs to determine whether additional safety procedures should be implemented. To this end, we request that persons who use such transportation systems to provide us with information on the effectiveness of the current DOT regulations, consensus standards, and industry best practices. We are also interested in any other procedures utilized to ensure that operations related to the transportation of acetylene on MATs are performed safely.

We would also like to work with shippers, carriers, and facilities that receive shipments of acetylene in MATs to develop and implement a pilot program to test the effectiveness of current or alternative procedures or methods designed to enhance the safety of transportation operations involving acetylene on MATs. As part of this program, we will assist individual companies or facilities to evaluate the effectiveness of their current procedures and to identify additional measures that should be implemented. We welcome suggestions concerning how such a program should be structured and the entities that should participate.

To ensure that our message reaches all stakeholders affected by these risks, we plan to communicate this advisory through our public affairs notification and outreach processes. For additional visibility, we have made this advisory available on the PHMSA homepage at <http://www.phmsa.dot.gov> and the DOT electronic docket site at <http://dms.dot.gov>. In addition, if you are aware of other companies that are involved in the charging, operating, and discharging MATs, please share this advisory notice with them and, if possible, identify them in your correspondence with this agency. We believe a collaborative effort involving an integrated and cooperative approach will help us to address safety risks, reduce incidents, enhance safety, and protect the public.

Issued in Washington, DC on August 30, 2007.

Theodore L. Wilko,
Associate Administrator for Hazardous
Materials Safety.

[FR Doc. 07-4355 Filed 9-5-07; 8:45 am]

BILLING CODE 4910-60-P

DEPARTMENT OF TRANSPORTATION

Pipeline and Hazardous Materials Safety Administration

[Docket No. PHMSA-2004-19856]

Pipeline Safety: Updated Notification of the Susceptibility to Premature Brittle-Like Cracking of Older Plastic Pipe

AGENCY: Pipeline and Hazardous
Materials Safety Administration
(PHMSA); DOT.

ACTION: Notice; Issuance of Advisory
Bulletin.

SUMMARY: PHMSA is issuing this updated advisory bulletin to owners and operators of natural gas pipeline distribution systems concerning the susceptibility of older plastic pipe to premature brittle-like cracking. PHMSA previously issued three advisory bulletins on this subject: Two on March 11, 1999 and one on November 26, 2002. This advisory bulletin expands on the information provided in the three prior bulletins by listing two additional pipe materials with poor performance histories relative to brittle-like cracking and by updating pipeline owners and operators on the ongoing voluntary efforts to collect and analyze data on plastic pipe performance. Owners and operators of natural gas pipeline distribution systems are encouraged to review the three previous advisory bulletins in their entirety.

FOR FURTHER INFORMATION CONTACT:
Richard Sanders at (405) 954-7214, or
by e-mail at richard.sanders@dot.gov.

SUPPLEMENTARY INFORMATION:

I. National Transportation Safety Board (NTSB) Investigation

On April 23, 1998, the National Transportation Safety Board (NTSB) issued its Special Investigation Report, *Brittle-Like Cracking in Plastic Pipe for Gas Service*, NTSB/SIR-98/01. The report described the results of the NTSB's special investigation of polyethylene gas service pipe, which addressed three major safety issues: (1) Vulnerability of plastic piping to premature failures due to brittle-like cracking; (2) adequacy of available guidance relating to the installation and protection of plastic piping connections to steel mains; and, (3) effectiveness of performance monitoring of plastic pipeline systems to detect unacceptable performance in piping systems.

(1) *Vulnerability of plastic piping to premature failures due to brittle-like cracking:* The NTSB found that failures in polyethylene pipe in actual service are frequently brittle-like, slit failures,

not ductile failures. It concluded the number and similarity of plastic pipe accident and non-accident failures indicate past standards used to rate the long-term strength of plastic pipe may have overrated the strength and resistance to brittle-like cracking for much of the plastic pipe manufactured and used for gas service from the 1960s through the early 1980s. The NTSB also concluded any potential public safety hazards from these failures are likely to be limited to locations where stress intensification exists. The NTSB went on to state that more durable modern plastic piping materials and better strength testing have made the strength ratings of modern plastic piping more reliable.

(2) *Adequacy of available guidance relating to the installation and protection of plastic piping connections to steel mains:* The NTSB concluded that gas pipeline operators had insufficient notification of the brittle-like failure potential for plastic pipe manufactured and used for gas service from the 1960s to the early 1980s. The NTSB also concluded this may not have allowed companies to implement adequate surveillance and replacement programs for older plastic piping. The NTSB explained the Gas Research Institute (GRI) developed a significant amount of data on older plastic pipe but the data was published in codified terms making it insufficient for use by pipeline system operators. The NTSB recommended that manufacturers of resin and pipe, industry trade groups and the Federal government do more to alert pipeline operators to the role played by stress intensification from external forces in the premature failure of plastic pipe due to brittle-like cracking.

(3) *Effectiveness of performance monitoring of plastic pipeline systems as a way of detecting unacceptable performance in piping systems:* The NTSB's analysis noted that Federal regulations require pipeline operators to have an ongoing program to monitor the performance of their pipeline systems. However, the NTSB investigation revealed some gas pipeline operators' performance monitoring programs did not effectively collect and analyze data to determine the extent of possible hazards associated with plastic pipeline systems. The NTSB pointed out, "such a program must be adequate to detect trends as well as to identify localized problem areas, and it must be able to relate poor performance to specific factors such as plastic piping brands, dates of manufacture (or installation dates), and failure conditions."

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U.S. Department
of Transportation
Pipeline and Hazardous Materials
Safety Administration

OCT 13 2010

1200 New Jersey Ave., SE
Washington, DC 20590

The Honorable Deborah A.P. Hersman
Chairman
National Transportation Safety Board
490 L'Enfant Plaza, SW
Washington, DC 20594

Dear Chairman Hersman:

This letter provides an update on Safety Recommendations A-07-104 through A-07-108, A-08-1, and A-08-2 issued by the National Transportation Safety Board (NTSB) to the U.S. Department of Transportation (DOT). The Deputy Secretary has asked me to respond on his behalf.

The Safety Board made the following safety recommendations to the Pipeline and Hazardous Materials Safety Administration (PHMSA):

Safety Recommendation A-07-104:

Require aircraft operators to implement measures to reduce the risk of primary lithium batteries becoming involved in fires on cargo-only aircraft, such as transporting such batteries in fire resistant containers and/or in restricted quantities at any single location on the aircraft.

Safety Recommendation A-07-105:

Until fire suppression systems are required on cargo-only aircraft, as asked for in Safety Recommendation A-07-99, require that cargo shipments of secondary batteries including those contained in or packed with equipment be transported in crew-accessible locations where portable fire suppression systems can be used.

In the Notice of Proposed Rulemaking (NPRM), titled "Hazardous Materials: Transportation of Lithium Batteries," published on January 11, 2010, PHMSA proposed several actions to implement these recommendations. Specifically, PHMSA proposed to prohibit stowage of lithium metal batteries, transported in an inaccessible manner unless the inaccessible cargo compartment or freight container is equipped with a Federal Aviation Administration (FAA)-approved fire suppression system or the lithium batteries are packaged in an FAA-approved fire resistant container. The PHMSA also sought comments on how limiting the number of lithium batteries in a single aircraft, single compartment, unit load device, pallet or similar overpack would further enhance safety.

Since publication of the NPRM, FAA has continued to study the fire behavior of both lithium

metal and lithium ion batteries, including the effectiveness of metal packaging and depressurization in controlling a fire involving lithium metal batteries. (Depressurization is a common suppression method used to help respond to fires on the main deck of a cargo-only aircraft.) These investigations found that (1) metal containers were ineffective in containing a lithium metal cell in thermal runaway, and (2) reduced air pressure had no effect on lithium metal cells once they were in thermal runaway. This additional testing reaffirms the conclusion that the ban on transporting lithium metal cells and batteries as cargo aboard passenger aircraft should remain in effect. In addition, further regulatory action extending the ban to cargo aircraft will be reevaluated. Further research for processes, procedures, or materials to mitigate the risk of onboard fires involving lithium metal batteries will continue. As we gather more data and refine our understanding of different containers and engineering processes, additional regulatory action may be necessary.

The FAA also examined the fire behavior of lithium ion batteries, including the effectiveness of cargo compartment fire suppression systems, fire resistant containers, and hand-held fire extinguishers and found that several promising approaches exist to mitigate fires involving lithium ion batteries during air transport. Fire suppression systems in Class C cargo compartments proved effective in extinguishing open flames but will not stop the propagation of thermal runaway between cells, resulting in reignition. A fire resistant container or overpack also appears to mitigate the hazard present in shipping lithium ion batteries in non-Class C cargo compartments, such as those found on cargo-only aircraft (Class E). Additional work is needed in this area to develop a performance standard for this container. Testing revealed a limited advantage in placing a shipment of lithium ion cells in an accessible location.

The FAA and PHMSA are continuing to assess the value of packaging and cargo-stowage limits for lithium ion batteries not transported in a Class C cargo compartment. We anticipate obtaining additional information with alternatives for improved safety measures for the transport of lithium ion batteries shipped as cargo as a result of the same evaluation. As we gather more data and refine our understanding of different containers and engineering processes, additional regulatory action may be necessary. These issues will have the immediate attention of DOT and are expected to be included in a rulemaking based on the results of the continuing research and testing.

Safety Recommendation A-07-106:

Require aircraft operators that transport hazardous materials to immediately provide consolidated and specific information about hazardous materials on board an aircraft, including proper shipping name, hazard class, quantity, number of packages, and location, to on-scene emergency responders upon notification of an accident or incident.

The NTSB's July 21 letter advised that this recommendation has been classified "Closed—Acceptable Action."

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Safety Recommendation A-07-107:

Require commercial cargo and passenger operators to report all incidents involving primary and secondary lithium batteries, including those contained in or packed with equipment, that occur either on board or during loading or unloading operations and retain the failed items for evaluation purposes.

Safety Recommendation A-07-108:

Analyze the causes of all thermal failures and fires involving secondary and primary lithium batteries and, based on this analysis, take appropriate action to mitigate any risks determined to be posed by transporting lithium batteries, including those contained in or packed with equipment, on board cargo and passenger aircraft as cargo; checked baggage; or carry-on items.

In its comments to the January 11 NPRM, NTSB stated that PHMSA did not propose a retention requirement for lithium batteries and equipment, but only requested comments about how retention of failed batteries and equipment might be achieved and analyzed properly. The PHMSA has proposed to modify 49 C.F.R. § 171.21 to require a shipper, carrier, package owner, or person reporting an incident under the provisions of §§ 171.15 or 171.16 to provide upon request, by an authorized representative of the Federal, State, or local government agency, reasonable assistance in investigating a transportation incident. Such assistance would include providing reasonable access to the damaged package or article, if available. The PHMSA believes this requirement would meet the intent of Safety Recommendation A-07-107 and facilitate the accomplishment of Safety Recommendation A-07-018, while still permitting a reporting person or other responsible person discretion in the disposition of the damaged package or article consistent with protecting human health and the environment.

The NTSB has also expressed concern that PHMSA did not discuss the reliability of the data used to determine the causes of the observed incidents. The risk assessment for transportation of lithium batteries discussed in the NPRM is based on an analysis of historical incident data on lithium batteries compiled by FAA. This incident data was the primary source of data used in the analysis. The data includes a narrative report completed by field inspectors that describes the nature of the incidents to the extent that information is available. Other information in the incident reports include the type of battery, the devices in which batteries were contained, if applicable, and the aircraft type (e.g., passenger or cargo aircraft). Despite its limitations, FAA data is the most comprehensive publicly available source to perform a data-driven risk assessment for lithium batteries flown on passenger and cargo aircraft.

In support of its ongoing efforts to understand the causes of lithium battery incidents, PHMSA recently finalized an interagency agreement with the U.S. Department of Defense Naval Surface Warfare Center, Carderock Division, to perform compliance and risk assessment testing

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of lithium batteries in an effort to ensure manufacturer compliance and to further enhance risk reduction for the transportation of such batteries. A major component of this agreement includes the testing and examination on lithium battery remnants and packaging that were involved in an incident and an analysis of the probable cause of the incident. This program will greatly enhance PHMSA's knowledge of the causes of transportation incidents and assist in investigations and appropriate enforcement. Based on the actions outlined above and pending the issuance of the final rule, we request that Safety Recommendations A-07-107 and A-07-108 be classified as "Closed—Acceptable Action." We appreciate your consideration of this request.

Safety Recommendation A-08-1:

In collaboration with air carriers, manufacturers of lithium batteries and electronic devices, air travel including flight crews, about the safe carriage of secondary (rechargeable) lithium batteries or electronic devices containing these batteries on board passenger aircraft.

Safety Recommendation A-08-2:

In collaboration with air carriers, manufacturers of lithium batteries and electronic devices, air travel the safe carriage of secondary (rechargeable) lithium batteries or electronic devices containing these batteries on board passenger aircraft.

The PHMSA continues its ongoing focus to educate the public on the safe use and handling of batteries and devices containing batteries. The SafeTravel campaign focuses on bringing people to the SafeTravel Web site for information by branding guidance material and other content with the SafeTravel logo. The PHMSA includes the Safetravel logo on outreach materials and PHMSA Web site. Links to the Safetravel Web site also appear on many other familiar information sources for air travelers, such as the Transportation Security Administration and FAA. Recently, *Fast Line*, the official blog of the U.S. Secretary of Transportation featured SafeTravel. The PHMSA continues to maintain and expand the SafeTravel Web site to provide up-to-date guidance to air travelers.

Additionally, PHMSA developed an extensive guide for shipping batteries safely by air that targets infrequent shippers of batteries of all types and includes full color pictures and plain language guidance to facilitate compliance with the applicable rules (copy enclosed). The PHMSA also modified the highly recognizable "These Fly..." poster (copy enclosed) to place a greater emphasis on lithium batteries and lithium battery-powered devices.

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Recently, PHMSA has targeted its outreach efforts to specific groups. During the fall of 2009, PHMSA contacted more than 100 retailers and distributors of e-cigarettes to make them aware that lithium batteries, such as those contained in e-cigarettes, are regulated by the Hazardous Materials Regulations and provided them with information on the safe shipment of lithium batteries and battery-powered devices.

The FAA, in conjunction with the airline industry, embarked on a series of tests to determine the optimum procedure for fighting a laptop computer fire onboard an aircraft. Based on this testing, FAA developed a training video that demonstrates effective and practical methods of extinguishing a cabin fire involving lithium batteries in a laptop computer. The video, "Extinguishing In-Flight Laptop Computer Fires," may be viewed at the Fire Safety Team Web site: www.fire.tc.faa.gov. Subsequently, FAA issued a Safety Alert for Operators (June 23, 2009), titled, "Fighting Fires Caused by Lithium Type Batteries in Portable Electronic Devices." The purpose of the Safety Alert for Operators is to recommend procedures for fighting fires caused by lithium type batteries in portable electronic devices.

The PHMSA and FAA continue to collect and assess incident data for changes in passenger and flight crew awareness and behavior. Independent of incident data, PHMSA assesses the continued visibility of the SafeTravel public awareness campaign as a measure of the success of the campaign. The PHMSA partnerships with government and industry have ensured that SafeTravel information continues to figure prominently on government and airline Web sites and monthly in-flight magazines. Based on the actions outlined above, we request that Safety Recommendations A-08-1 and A-08-2 be classified as "Closed—Acceptable Action." We appreciate your consideration of this request.

I hope this information has been helpful.

Sincerely yours,

 CSO/
PHMSA

Cynthia Douglass

Enclosure

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U.S. Department
of Transportation
**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Ave., S.E.
Washington, DC 20590

MAR 28 2008

The Honorable Mark V. Rosenker
Chairman
National Transportation Safety Board
490 L'Enfant Plaza, SW
Washington, DC 20594

Dear Mr. Chairman:

Thank you for your December 17, 2007 letter concerning safety recommendations A-07-104 through A-07-109. The recommendations were issued following the National Transportation Safety Board's (NTSB's) investigation of a hazardous materials incident on February 7, 2006, at the Philadelphia International Airport. In that incident, United Parcel Service Company flight 1307 landed at the airport after a cargo smoke indication in the cockpit. The captain, first officer, and a flight engineer evacuated the airplane after landing, sustaining minor injuries. The airplane and most of the cargo were destroyed by a fire. NTSB determined that the probable cause of this accident was an in-flight cargo fire from an unknown source. As a result of this accident, NTSB issued six safety recommendations to the Pipeline and Hazardous Materials Safety Administration (PHMSA). We have initiated the following actions to address the recommendations:

Safety Recommendation A-07-104:

Require aircraft operators to implement measures to reduce the risk of primary lithium batteries becoming involved in fires on cargo-only aircraft, such as transporting such batteries in fire resistant containers and/or in restricted quantities at any single location on the aircraft.

Safety Recommendation A-07-105:

Until fire suppression systems are required on cargo-only aircraft, as asked for in Safety Recommendation A-07-99, require that cargo shipments of secondary batteries, including those contained in or packed with equipment; be transported in crew-accessible locations where portable fire suppression systems can be used.

In response to Safety Recommendations A-07-104 and A-07-105 we are considering rulemaking to require packages of primary and secondary lithium batteries to be loaded aboard a cargo aircraft in such a manner that a crew member or other authorized person can access, handle, or, when size and weight permit, separate such packages from other cargo during flight.

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We are also considering a limitation on the total amount of lithium batteries that may be stowed in an inaccessible cargo location. During a recent International Civil Aviation Organization (ICAO) Dangerous Goods Panel Meeting, PHMSA and FAA supported reducing the limits on the quantity of primary and secondary lithium batteries and cells that may be contained in each package offered for transport aboard an aircraft. These new package quantity limits will come into force from January 1, 2009 in the international aviation transport regulations which the vast majority of carriers follow. The new package limits will result in limiting the quantity of batteries or cells that are transported aboard cargo aircraft. We will address these new limits in a rulemaking project that we are currently initiating to align the Hazardous Materials Regulations with the 2009-2010 edition of the ICAO TI. We also plan to conduct a risk assessment, identify additional alternative safety strategies, and assess the costs and benefits of these alternatives in conjunction with our rulemaking initiative to develop and implement the most appropriate solutions to address these recommendations.

We are only just beginning to investigate and study the feasibility of using fire resistant containers for the transport of lithium batteries.

Safety Recommendation A-07-106:

Require aircraft operators that transport hazardous materials to immediately provide consolidated and specific information about hazardous materials on board an aircraft, including proper shipping name, hazard class, quantity, number of packages, and location, to on-scene emergency responders upon notification of an accident or incident.

The Hazardous Materials Regulations require an aircraft operator to: (1) place on the notification of pilot-in-command (NOPC) or in the cockpit of the aircraft a telephone number that can be contacted during an in-flight emergency to obtain information about any hazardous materials aboard the aircraft; (2) retain and provide upon request a copy of the NOPC, or the information contained in it, at the aircraft operator's principal place of business, or the airport of departure, for 90 days, and at the airport of departure until the flight leg is completed; and (3) make readily accessible, and provide upon request, a copy of the NOPC, or the information contained in it, at the planned airport of arrival until the flight leg is completed.

The International Civil Aviation Organization's Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO TI) provides the following guidance on the transfer of hazardous materials information between aircraft operators and emergency personnel: "In the event of an aircraft accident or serious incident, the operator of an aircraft carrying dangerous goods as cargo must provide information, without delay, to emergency services responding to the accident or serious incident about the dangerous goods on board, as shown on the copy of the information to the pilot-in-command." The majority of operators follow the ICAO requirements through their adoption in the International Air Transport Association (IATA) Dangerous Goods Regulations and therefore will adopt the practice of providing emergency response information quickly without delay. We are considering amending the Hazardous Materials Regulations to require that emergency response information be provided "without delay" and plan to propose this change in an upcoming rulemaking. We are also studying

options for more effectively communicating emergency response information electronically and will be undertaking a research project under the Hazardous Materials Cooperative Research Program to study and demonstrate how electronic transmission of emergency response and shipping information can enhance safety.

Safety Recommendation A-07-107:

Require commercial cargo and passenger operators to report all incidents involving primary and secondary lithium batteries, including those contained in or packed with equipment, that occur either on board or during loading or unloading operations and retain the failed items for evaluation purposes.

We agree that a requirement to report incidents involving lithium batteries transported by air, even those that are otherwise not subject to specific regulatory requirements, will provide useful information on the risks associated with such transportation and possible measures to reduce those risks. We plan to propose to require cargo and passenger operators to report all incidents involving primary and secondary lithium batteries, including those contained in or packed with equipment, in an upcoming rulemaking.

We also agree that an examination of failed batteries and associated electronic devices and equipment will provide valuable data and information as we continue to assess the transportation risks associated with these items. We are working with the FAA and the airlines to establish a cooperative program for effectively securing and preserving evidence and passenger information when incidents occur. We plan to develop a standard protocol to be used by aircraft operators in the event of an incident. This protocol will include procedures for: (1) immediate reporting of the incident to DOT, (2) preservation of the batteries and/or electronic equipment that failed and transfer to appropriate authorities for analysis and evaluation, and (3) obtaining relevant information from passengers and crew members, including contact information for follow-up interviews as necessary. The recent cooperation between Northwest Airlines, PHMSA, FAA and NTSB in response to the February 14, 2008 incident involving a battery powered flashlight fire in a passenger's carry-on bag serves as a positive example of the progress we are making.

Safety Recommendation A-07-108:

Analyze the causes of all thermal failures and fires involving secondary and primary lithium batteries and, based on this analysis, take appropriate action to mitigate any risks determined to be posed by transporting lithium batteries, including those contained in or packed with equipment, on board cargo and passenger aircraft as cargo; checked baggage; or carry-on items.

We recently completed an analysis of the incidents that have occurred involving lithium batteries. Our analysis suggests the following likely root causes of these incidents: (1) external short circuits resulting from exposed battery terminals that come into contact with metal objects; (2) internal short circuits resulting from manufacturing defects, poor battery design, or damage to a battery; (3) improper use resulting in problems with the interaction between the

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battery and the device it charges or the battery and its charging device; and (4) a non-compliance situation, such as batteries that were not manufactured to basic industry standards and regulatory requirements, undeclared shipments, or improper packaging.

The analysis of incidents and probable root causes was recently updated to take into account the most recent incidents (see enclosure). Incident information gathered by the Federal Aviation Administration (FAA) on 90 incidents occurring from 1991 to 2008 indicates that: 27 % of the incidents involved lithium batteries and 68 % involved non-lithium batteries. Of the lithium battery incidents, 73 % resulted from short-circuiting (external and internal short combined); 12 % from charging/discharging; 6 % from unintentional activation of devices; and 9 % from other causes (malfunction of devices, improper handling of cargo and unknown causes). For non-lithium batteries, 72 % of the incidents resulted from short-circuiting (mostly external); 11 % from unintentional activation of devices; 4 % from improper handling; and 13 % from other causes (malfunction of devices, improper handling of cargo and unknown causes). We intend to comprehensively analyze the root causes of all incidents involving lithium batteries that overheat or cause fires aboard aircraft. We will use this information to further refine the strategies we have developed to mitigate the risks associated with transporting lithium batteries.

Safety Recommendation A-07-109:

Eliminate regulatory exemptions for the packaging, marking, and labeling of cargo shipments of small secondary lithium batteries (no more than 8 grams equivalent lithium content) until the analysis of the failures and the implementation of risk-based requirements asked for in Safety Recommendation A-07-108 are completed.

Our August 9, 2007 final rule imposed new marking, documentation, and test requirements for small primary and secondary lithium batteries. Small lithium batteries must be tested in accordance with the United Nations Manual of Tests and Criteria to ensure they can withstand conditions encountered during transportation. In addition, each package containing more than 24 lithium cells or 12 lithium batteries must: (1) be marked to indicate that it contains lithium batteries, and special procedures should be followed in the event that the package is damaged; (2) be accompanied by a document indicating that the package contains lithium batteries and special procedures should be followed in the event that the package is damaged; (3) be capable of withstanding a 1.2 meter drop test in any orientation without damage to cells or batteries contained in the package, without shifting of the contents that would allow short circuiting and without release of package contents; and (4) not exceed a gross package weight of 30 kg.

We plan to complete a formal assessment of the costs and benefits associated with eliminating the regulatory exceptions for small lithium batteries and will identify regulatory and other approaches based on that assessment. For example, we will consider whether requiring small lithium batteries to be regulated as Class 9 materials and subject to the full range of packaging and hazardous communication requirements applicable to Class 9 materials will be effective in reducing their risk in transportation, whether the measures taken to date are sufficient and whether other alternative solutions can be equally effective in reducing risk.

Appendix B

PHMSA, in close cooperation with the FAA, led efforts to enhance international regulatory requirements for the transport of lithium batteries, including enhancements to the ICAO TI and the United Nations Recommendations on the Transport of Dangerous Goods. These enhanced requirements will apply to both shippers and carriers and will come into effect on January 1, 2009 in the 2009-2010 edition of the ICAO TI. They will provide for more precise shipping descriptions for lithium metal and lithium-ion batteries, improved packaging standards, and enhanced hazard communication requirements. For instance all packages containing small lithium batteries will be required to be marked with a 100mm x 100mm red hatched handling label (see attached example). The new marking also requires an indication of the type of battery, specific warning statements (pictograms for fragile and flammable potential if damaged), procedures to be followed in the event of an incident (a notification to not load or transport if the package is damaged), and an emergency response telephone number and to be accompanied by a shipping document with the same information. The new ICAO packaging standards for shipments of previously excepted small lithium batteries will require the package to be strong enough to withstand a 1.2 meter drop without damage to the package contents and there will be new limits on the quantity of small batteries permitted in a single package. For lithium-ion batteries, the authorized gross weight was reduced from 30 kg to 10 kg per package. For lithium metal batteries, the authorized gross weight under the exception was reduced from 30 kg per package to 2.5 kg per package. Limiting the total authorized gross weight of individual packages should result in a reduction in the total number of batteries in a consignment.

We believe that the ICAO measures will enhance safety and will consider incorporating the new provisions into the Hazardous Materials Regulations. At the same time, we will work with FAA and others to consider and assess the effectiveness of additional regulatory requirements to address the safety risks associated with transporting lithium batteries on board cargo and passenger aircraft.

Our August 9, 2007 final rule and the additional rulemaking actions we are planning are only one component of the comprehensive program PHMSA and the FAA have implemented to improve the safety of lithium batteries in transportation. We will continue to carry out a comprehensive strategy aimed at reducing the transportation risks posed by batteries of all types. We are planning on hosting a follow on public and private sector stakeholder meeting on April 11, 2008 to identify and agree on the next steps to advance initiatives to reduce risk and enhance safety. We hope you will be able to attend. Our continued actions will include comprehensive reporting and investigation of battery-related incidents; a focus on enhancing industry practices and consensus standards for improved battery, consumer product, and software design; consideration and implementation of improved regulatory standards; focused enforcement; and development and implementation of our public outreach and education campaign. Through an integrated and cooperative approach, we can be most successful in reducing incidents, enhancing safety, and protecting the public.

We will continue to evaluate the hazards posed by lithium batteries in transportation, monitor and investigate incidents to identify root causes and continue to progress our multifaceted initiative involving rulemaking, outreach, enforcement and partnerships to raise public awareness.

Appendix B

This is one of our top safety priorities and we are applying significant resources to minimizing the risk associated with the transportation of lithium batteries as cargo and by passengers aboard aircraft. As we complete our analyses and propose additional requirements, we will keep you informed of our progress. If you have any questions, please contact me at (202) 366-4433.

We request that you classify recommendations A-07-104, 105, 106, 107 and 109 as "Open – Acceptable Action" and A-07-108 as "Closed Acceptable Action". We thank you for consideration of our request.

Sincerely,



Stacey L. Gerard
Assistant Administrator/Chief Safety Officer

Enclosures

Monday through Friday, except Federal holidays. The Dockets Office (telephone 1-800-647-5527) is on the plaza level of the NASSIF Building at the Department of Transportation at the above address. Also, you may review public dockets on the Internet at <http://dms.dot.gov>.

FOR FURTHER INFORMATION CONTACT: Jan Thor, ANM-113, (425) 227-2127, Federal Aviation Administration, 1601 Lind Avenue SW, Renton, WA 98057-3356 (for STRONG Aero Engineering), or Frances Shaver, (202-267-6681), Office of Rulemaking (ARM-1), Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591. This notice is published pursuant to 14 CFR 11.85 and 11.91.

Issued in Washington, DC, on March 19, 2007.

Pamela Hamilton-Powell,
Director, Office of Rulemaking.

Petitions for Exemption

Docket No.: FAA-2007-27452.

Petitioner: STRONG Aero

Engineering.
Section of 14 CFR Affected: 14 CFR 25.853(d).

Description of Relief Sought: STRONG Aero Engineering is seeking an exemption from § 25.853(d) to permit use of interior materials that do not comply with the head release and smoke emissions requirements, on McDonnell Douglas DC-9-87 (MD-87) airplanes, with certain limitations.

[FR Doc. E7-5495 Filed 3-23-07; 8:45 am]
BILLING CODE 4910-12-P

DEPARTMENT OF TRANSPORTATION

Federal Transit Administration

[Docket No. FTA-2007-27663]

Notice of Request for the Extension of a Currently Approved Information Collection

AGENCY: Federal Transit Administration, DOT.

ACTION: Notice of request for comments.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995, this notice announces the intention of the Federal Transit Administration (FTA) to request the Office of Management and Budget (OMB) to extend the following currently approved information collection:

49 U.S.C. 5310 and 5311—Capital Assistance Program for Elderly Persons and Persons with Disabilities and Nonurbanized Area Formula Program

DATES: Comments must be submitted before May 25, 2007.

ADDRESSES: All written comments must refer to the docket number that appears at the top of this document and be submitted to the United States Department of Transportation, Central Dockets Office, PL-401, 400 Seventh Street, SW., Washington, DC 20590. All comments received will be available for examination at the above address from 10 a.m. to 5 p.m., e.t., Monday through Friday, except Federal holidays. Those desiring notification of receipt of comments must include a self-addressed, stamped postcard/envelope. **FOR FURTHER INFORMATION CONTACT:** Ms. Cheryl Oliver, Office of Program Management, (202) 366-2053.

SUPPLEMENTARY INFORMATION: Interested parties are invited to send comments regarding any aspect of this information collection, including: (1) The necessity and utility of the information collection for the proper performance of the functions of the FTA; (2) the accuracy of the estimated burden; (3) ways to enhance the quality, utility, and clarity of the collected information; and (4) ways to minimize the collection burden without reducing the quality of the collected information. Comments submitted in response to this notice will be summarized and/or included in the request for OMB approval of this information collection.

Title: 49 U.S.C. 5310 and 5311—Capital Assistance Program for Elderly Persons and Persons with Disabilities and Nonurbanized Area Formula Program (OMB Number: 2132-0500)

Background: The Capital Assistance Program for Elderly Persons and Persons with Disabilities provides financial assistance for the specialized transportation service needs of elderly persons and persons with disabilities. The program is administered by the States and may be used in all areas, urbanized, small urban, and rural. The Nonurbanized Area Formula Program provides financial assistance for the provision of public transportation services in nonurbanized areas and this program is also administered by the States. 49 U.S.C. 5310 and 5311 authorize FTA to review applications for federal financial assistance to determine eligibility and compliance with statutory and administrative requirements. Information collected during the application stage includes the project budget, which identifies funds requested for project implementation; a program of projects, which identifies subrecipients to be funded, the amount of funding that each will receive, and a description of the

projects to be funded; the project implementation plan; the State management plan; a list of annual certifications and assurances; and public hearings notice, certification and transcript. The applications must contain sufficient information to enable FTA to make the findings required by law to enforce the program requirements. Information collected during the project management stage includes an annual financial report, an annual program status report, and pre-award and post-delivery audits. The annual financial report and program status report provide a basis for monitoring approved projects to ensure timely and appropriate expenditure of federal funds by grant recipients.

Respondents: State and local government, business or other for-profit institutions, non-profit institutions, and small business organizations.

Estimated Annual Burden on Respondents: 102.44 hours for each of the respondents.

Estimated Total Annual Burden: 11,370 hours.

Frequency: Annual.

Issued: March 20, 2007.

Ann M. Linnertz,
Associate Administrator for Administration.
[FR Doc. E7-5416 Filed 3-23-07; 8:45 am]
BILLING CODE 4910-57-P

DEPARTMENT OF TRANSPORTATION

Pipeline and Hazardous Materials Safety Administration

[Docket No. PHMSA-2007-27493; Notice No. 07-02]

Advisory Guidance; Transportation of Batteries and Battery-Powered Devices by Airline Passengers and Crew Members

AGENCY: Pipeline and Hazardous Materials Safety Administration (PHMSA), DOT.

ACTION: Safety advisory.

SUMMARY: The Pipeline and Hazardous Materials Safety Administration is issuing this advisory to inform the traveling public and airline employees about the importance of properly packing and handling batteries and battery-powered devices when they are carried aboard aircraft. Thousands of batteries and battery-powered devices are safely carried aboard passenger aircraft each day, but several recent incidents involving batteries in checked or carry-on baggage illustrate the risks of overheating and fire that can occur when the regulations are not followed. Federal regulations require that

electrical storage batteries or battery-powered devices carried aboard passenger aircraft be properly packaged or protected to avoid short-circuiting or overheating. In this safety advisory, we suggest various practical measures for complying with the regulations and minimizing transportation risks. Recommended practices include keeping batteries installed in electronic devices; packing spare batteries in carry-on baggage; keeping spare batteries in their original retail packaging; separating batteries from other metallic objects such as keys, coins and jewelry by packing individual batteries in a sturdy plastic bag; securely packing battery-powered equipment in a manner to prevent accidental activation; and ensuring batteries are undamaged and purchased from reputable sources.

FOR FURTHER INFORMATION CONTACT: Hazardous Materials Information Center, Office of Hazardous Materials Standards, PHMSA, Department of Transportation, 400 Seventh Street, SW., Washington, DC, 20590-0001. Telephone: (800) 467-4922 or (202) 366-4488.

I. Introduction

Technological advances and the demands of a mobile society have made the use of portable electronic equipment and other battery-powered devices an established part of the modern American lifestyle. Americans increasingly own—and travel with—portable telephones, computers, cameras, camcorders, entertainment devices, and medical equipment—even cordless power tools. The batteries that power these devices are increasingly as varied as the products themselves: they are manufactured by many different companies, foreign and domestic, rely on a variety of power-generating technologies, established and newer; and come in all manner of shapes and sizes.

Portable battery-powered devices and batteries are safe for transportation when packed properly. But like many other materials that are part of daily consumer use, they must be handled and packaged appropriately to prevent unsafe conditions. A power tool that can be safely used for its intended purpose can cause damage if it is unintentionally activated inside a closed suitcase. Similarly, a battery can cause damage if it is improperly charged, abused, or short-circuited.

II. Safe Transportation of Electronic Devices and Spare Batteries

As the Federal regulatory agency with responsibility for the safe movement of hazardous materials by all modes of

transportation, it is PHMSA's job to establish safety standards for the safe transportation of batteries and battery-powered devices. Our goal is to minimize risks to persons, property, and the environment, while keeping these materials moving in commerce. We apply the highest standards to transportation by air, recognizing that any fire aboard a passenger flight is unacceptable.

A. Passenger Regulations

PHMSA's regulations (Hazardous Materials Regulations (HMR; Title 49, Code of Federal Regulations, parts 171-180)) prohibit the transportation of electrical devices, unless the devices are packed in a manner to prevent sparks or overheating (see § 173.21(c)). Airline passengers who carry batteries or electrical devices in carry-on or checked baggage are responsible for ensuring appropriate steps are taken to protect against dangerous levels of heat that can be generated by inadvertent activation or short-circuiting of these devices while in transportation.

B. Recent Transportation Incidents

Over the past several years, we have received a number of reports of transportation incidents involving various kinds of batteries and battery-powered devices, including incidents involving passenger airline operations. The most recent incident occurred on February 10, 2007, aboard a flight originating at JFK International Airport. Shortly after takeoff, a fire ignited in a passenger bag stowed in an overhead bin. Fast and appropriate action by the crew brought the fire under control and prevented injury to passengers and crew. The flight crew promptly extinguished the fire and the flight returned to JFK for an emergency landing. Although the fire is still under investigation by PHMSA, the Federal Aviation Administration (FAA), and the National Transportation Safety Board (NTSB), preliminary reports indicate batteries were involved in the incident.

Other incidents have occurred on the ground. Last May, we received a report of a fire involving a spare lithium ion battery that had been stowed in a passenger's notebook computer carrying case. A flight attendant removed the burning case from the passenger cabin, and tossed it onto the ramp, where the fire was extinguished by ground personnel.

On April 18, 2004, at Chicago's Midway Airport, a power drill with an installed nickel cadmium battery activated while in checked luggage. This caused a fire that spread to other bags

on a luggage cart waiting to be loaded onto a passenger aircraft.

In June 2003, we received reports that an overheated battery had been discovered in a routine baggage inspection of a flight departing from Logan Airport in Boston. The battery had been loosely packed in a toolbox, along with various metal tools. We believe the heat build-up was caused by short-circuiting when the battery's exposed terminals came in contact with metal objects in the toolbox.

C. Battery Operation and Risks

By design, all batteries operate through a controlled chemical reaction, which generates electrical energy and, in the process, some degree of heat. Batteries are designed to generate an electrical current and transmit power through terminals made of a conductive metal. It is their capacity to perform that basic function that makes them useful but, if not properly handled, designed or manufactured, poses a risk of overheating and fire.

External short-circuiting of a battery can occur from contact or close proximity of metal objects or other batteries near exposed terminals. The newest generation of batteries using lithium metal or lithium ion technology pose particular risks, based on their energy density and chemistry, and because fires involving these batteries are more difficult to extinguish or suppress. Even nickel cadmium and nickel metal-hydride batteries can generate large amounts of current and heat when short-circuited.

As with any product, manufacturing defects also can cause safety problems. Last summer, several major notebook computer manufacturers initiated recalls of their lithium ion batteries after learning of overheating and fires caused by a production defect in the batteries installed in the notebooks. According to the Consumer Product Safety Commission, manufacturers have voluntarily recalled over 10 million lithium-ion batteries in the last few years. We are also aware of risks associated with overcharging and internal short circuits that have led to battery recalls.

D. Measures for Safe Transportation of Batteries

We are aware that travelers want to take appropriate measures to ensure their safety and that of their fellow passengers and may need reminders or assistance to know how to travel safely with batteries. We recommend the following measures to ensure battery terminals are effectively insulated and

batteries and equipment are protected from damage and accidental initiation:

(1) *Keep batteries installed in portable electronic devices.* Passengers can safely carry electronic devices with installed batteries, such as, cellular phones, notebook computers, cameras, camcorders, entertainment devices, and medical equipment, in the passenger cabin of an airplane. When replacing with a spare battery during flight, handle batteries with care and pack spare batteries safely.

(2) *Pack spare batteries in carry-on baggage.* Conditions that could lead to an incident are easier to detect in the passenger compartment of an aircraft. Flight crews have access to fire extinguishers in the event of an in-flight incident involving batteries.

(3) *Keep spare batteries in the original retail packaging.* Batteries purchased from retail stores are packaged in plastic and cardboard packages intended for the transport of those batteries. This packaging prevents unintentional activation and short-circuiting by effectively isolating the batteries from contact with each other and other objects.

(4) *If original packaging is not available, effectively insulate battery terminals.* Effective insulation of battery terminals will ensure batteries do not short circuit from an external source. Travelers can effectively insulate battery terminals by isolating spare batteries from contact with other batteries and metal objects. If the original packaging is unavailable or damaged, place each battery individually in its own protective case, plastic bag or package. A sturdy, resealable plastic bag (e.g., a freezer bag or sturdy resealable sandwich bag) is suitable for this purpose. Covering the battery terminals with insulating tape, such as electrical tape, is another effective method. We recommend using both measures in combination for batteries that have protruding or sharp terminals (e.g., standard 9-volt batteries).

(5) *Do not carry recalled, damaged, or counterfeit batteries.*

Do not carry aboard a plane recalled, damaged or counterfeit batteries. Information about recalled batteries can be found at the manufacturer's Web site or from the Consumer Product Safety Commission (<http://www.cpsc.gov>). Passengers should only use batteries purchased from reputable sources.

(6) *Prevent inadvertent activation of battery-powered devices.*

Leaving batteries in battery-powered devices is an effective means of insulating the terminals and protecting against internal short-circuiting. However, battery-powered devices with

installed batteries must be packaged to prevent inadvertent activation. Cordless power tools, for instance, should be packed in a protective case, with a trigger lock engaged.

E. Next Steps

The publication of this safety advisory is one of several measures PHMSA is taking, in consultation with FAA, the NTSB, manufacturers of batteries and consumer products, airlines, testing laboratories, the emergency response and law enforcement community and other stakeholders, to respond to the battery-related incidents.

The Air Line Pilots Association, in conjunction with the International Federation of Air Line Pilots Associations, plans to simultaneously publish to their members a Safety Alert and Safety Bulletin respectively, concerning the hazards associated with in-flight passenger electronic equipment fires, and steps crewmembers should take in the event of a fire.

Over the next few months, PHMSA, FAA, and other interested public and private sector organizations will move ahead with actions to enhance battery transportation safety through development and revision of safety standards and public education and outreach.

In the meantime, airline passengers and crew members are reminded of their existing obligations under PHMSA's regulations. As noted above, airline passengers are prohibited from carrying batteries and battery-powered equipment aboard an aircraft unless the device and batteries have been packaged or protected against short-circuiting and overheating.

Issued in Washington, DC, on March 22, 2007.

Theodore L. Willke,
Acting Associate Administrator for
Hazardous Materials Safety.
[FR Doc. E7-5562 Filed 3-23-07; 8:45 am]
BILLING CODE 4910-60-P

DEPARTMENT OF TRANSPORTATION

Surface Transportation Board

[STB Docket No. AB-254 (Sub-No. 9X)]

Providence and Worcester Railroad Company—Abandonment Exemption—Slatersville Secondary Track (Woonsocket, RI and Blackstone, MA)

Providence and Worcester Railroad Company (P&W) has filed a notice of exemption under 49 CFR 1152 Subpart F—*Exempt Abandonments* to abandon a portion of the Slatersville Secondary Track located in Woonsocket,

Providence County, RI, extending from milepost 0.85 +/- at the north side of Boyden Street and continuing to a point that is 1,480 +/- feet northerly of the end of the track at milepost 0.0 in Blackstone, Worcester County, MA, a total distance of approximately 1.1 miles. The line traverses United States Postal Service Zip Codes 02895 and 01504.

P&W has certified that: (1) No local traffic has moved over the line for at least 2 years; (2) there is no overhead traffic on the line; (3) no formal complaint filed by a user of rail service on the line (or by a State or local government entity acting on behalf of such user) regarding cessation of service over the line either is pending with the Surface Transportation Board or with any U.S. District Court or has been decided in favor of complainant within the 2-year period; and (4) the requirements of 49 CFR 1105.7 (environmental report), 49 CFR 1105.8 (historic report), 49 CFR 1105.11 (transmittal letter), 49 CFR 1105.12 (newspaper publication), and 49 CFR 1152.50(d)(1) (notice to governmental agencies) have been met.

As a condition to this exemption, any employees adversely affected by the abandonment shall be protected under *Oregon Short Line R. Co.—Abandonment—Goshen*, 360 I.C.C. 91 (1979). To address whether this condition adequately protects affected employees, a petition for partial revocation under 49 U.S.C. 10502(d) must be filed.

Provided no formal expression of intent to file an offer of financial assistance (OFA) has been received, this exemption will be effective on April 25, 2007, unless stayed pending reconsideration. Petitions to stay that do not involve environmental issues,¹ formal expressions of intent to file an OFA under 49 CFR 1152.27(c)(2),² and trail use/rail banking requests under 49 CFR 1152.29 must be filed by April 5, 2007. Petitions to reopen or requests for public use conditions under 49 CFR 1152.28 must be filed by April 16, 2007, with: Surface Transportation Board, 395

¹The Board will grant a stay if an informed decision on environmental issues (whether raised by a party or by the Board's Section of Environmental Analysis (SEA) in its independent investigation) cannot be made before the exemption's effective date. See *Exemption of Out-of-Service Rail Lines*, 51 C.C.2d 377 (1999). Any request for a stay should be filed as soon as possible so that the Board may take appropriate action before the exemption's effective date.

²Each OFA must be accompanied by the filing fee which is currently set at \$1,300. See 49 CFR 1002.2(f)(25).



Federal Register

Thursday,
August 9, 2007

Part III

Department of Transportation

Pipeline and Hazardous Materials Safety
Administration

49 CFR Parts 171, 172, 173, and 175
Hazardous Materials; Transportation of
Lithium Batteries; Final Rule

DEPARTMENT OF TRANSPORTATION

Pipeline and Hazardous Materials
Safety Administration

49 CFR Parts 171, 172, 173 and 175

[Docket Nos. PHMSA-02-11989 (HM-224C)
and PHMSA-04-19886 (HM-224E)]

RIN 2137-AD48 and RIN 2137-AE05

Hazardous Materials; Transportation of
Lithium BatteriesAGENCY: Pipeline and Hazardous
Materials Safety Administration
(PHMSA), DOT.

ACTION: Final rule.

SUMMARY: The Pipeline and Hazardous Materials Safety Administration is amending the Hazardous Materials Regulations (HMR) to tighten the safety standards for transportation of lithium batteries, including both primary (non-rechargeable) and secondary (rechargeable) lithium batteries. Specifically, we are adopting with minor changes the amendments to the HMR published in an interim final rule on December 15, 2004, imposing a limited prohibition on the transportation of primary lithium batteries and cells as cargo aboard passenger-carrying aircraft. In addition, we are adopting many of the proposed changes to the HMR published under the April 2, 2002 NPRM: (1) Eliminating a hazard communication and packaging exception for medium-size lithium cells and batteries of all types transported by aircraft or vessel; (2) revising an exception for small lithium batteries and cells of all types to require testing in accordance with the United Nations Manual of Tests and Criteria; and (3) revising an exception for consumer electronic devices and spare lithium batteries of all types carried by airline passengers and crew. These amendments will enhance transportation safety by reducing fire hazards associated with lithium batteries and harmonizing U.S. and international standards.

DATES: Effective Date: The effective date of these amendments is January 1, 2008.

Voluntary Compliance: Voluntary compliance with all of these amendments, including those with a delayed mandatory compliance date, is authorized as of October 1, 2007.

FOR FURTHER INFORMATION CONTACT: John Gale or Arthur Pollack, Office of Hazardous Materials Standards, PHMSA, Department of Transportation, 400 Seventh Street, SW., Washington, DC 20590-0001, Telephone (202) 368-8553.

SUPPLEMENTARY INFORMATION:

List of Topics

I. Background

- A. Overview of Lithium Battery Risks
- B. LAX Incident and NTSB Recommendations
- C. Additional Incidents
- D. Recalls
- E. Regulatory Action To Address Transportation Risks Posed by Lithium Batteries of all Types
- II. Provision of This Final Rule
 - A. Docket HM-224C
 - B. Docket HM-224E
- III. Rulemaking Analyses and Notices
 - A. Statutory/Legal Authority for This Rulemaking
 - B. Executive Order 12866 and DOT Regulatory Policies and Procedures
 - C. Executive Order 13132 (Federalism)
 - D. Executive Order 13175
 - E. Regulatory Flexibility Act
 - F. Unfunded Mandates Reform Act of 1995
 - G. Paperwork Reduction Act
 - H. Environmental Assessment
 - I. Regulation Identifier Number
 - J. Privacy Act

This final rule is the culmination of two rulemaking proceedings initiated by the Research and Special Programs Administration (RSPA), the predecessor agency to the Pipeline and Hazardous Materials Safety Administration (PHMSA), in order to reduce the risks of battery-related fires in transportation and in response to incident reports and recommendations of the Federal Aviation Administration (FAA) and National Transportation Safety Board (NTSB). The final rule continues in force a limited ban on the transportation of certain lithium batteries as cargo aboard passenger aircraft. It tightens other standards for the testing, handling, and packaging of lithium batteries, in each case to reduce the likelihood or consequence of a lithium battery-related fire in transportation. Although we developed these standards in separate rulemaking proceedings, we have combined them for publication in this single final rule in the interests of clarity and consistency and to minimize regulatory burdens.

I. Background

The final rule adopted today is one of several actions PHMSA is taking, in consultation with the FAA, to improve the safety of lithium batteries in transportation. Beyond rulemaking and enforcement, PHMSA and FAA are promoting and advancing non-regulatory solutions through a broad group of public and private sector stakeholders that share our interest in battery and transportation safety. We are working with representatives of the NTSB, the Consumer Product Safety Commission, manufacturers of lithium

batteries and battery-powered products, airlines, airline employee organizations, testing laboratories, and the emergency response and law enforcement communities to share and disseminate information about battery-related risks and developments and to promote improvements in industry standards and best practices. We report on these non-regulatory activities through our public Web site at <http://safetravel.dot.gov>.

A. Overview of Lithium Battery Risks

Lithium batteries are considered a hazardous material for purposes of transportation regulation because they can overheat and ignite in certain conditions and, once ignited, can be especially difficult to extinguish. In general, the risks posed by lithium batteries are a function of battery size (the amount of lithium content and corresponding energy density) and the likelihood of short-circuiting or rupture. By comparison to standard alkaline batteries, most lithium-ion batteries manufactured today contain a flammable electrolyte and have a very high energy density. A lithium battery is susceptible to thermal runaway, a chain reaction leading to self-heating and release of its stored energy.

The increasing manifestation of these risks, inside and outside of transportation, drives the need for stricter safety standards. Once used primarily in industrial and military applications, lithium batteries are now found in a variety of popular consumer items, including cameras, laptop computers, and mobile telephones. The numbers, types, and sizes of lithium batteries moving in transportation have grown steadily in recent years with the increasing popularity of these and other portable devices and the corresponding proliferation of battery designs, manufacturers, and applications.

Like other products that contain hazardous materials, lithium batteries can be transported safely, provided appropriate precautions are taken in design, packaging, handling, and emergency response. The rule adopted in this proceeding strengthens the current regulatory framework by imposing stricter and more effective safeguards, including design testing, packaging, and hazard communication measures, for certain types and sizes of lithium batteries in certain transportation contexts.

These adjustments are risk-based and data-driven, reflecting incident reports, laboratory testing, and other information that together promote better understanding of risks and

consequences in relationship to specific risk variables:

Battery technology. In the rulemaking proposals that gave rise to the final rule, we differentiated between "primary" (or non-rechargeable) and "secondary" (or rechargeable) lithium batteries. This distinction, which is well established in international standards, is related to the battery composition. "Primary" (non-rechargeable) lithium batteries generally contain lithium metal, while most "secondary" (rechargeable) lithium batteries contain an ionic form of lithium (lithium-ion). The technology used in lithium batteries has a significant impact on the battery application and, all other factors being equal, on corresponding transportation risks.

For purposes of this rulemaking, we use the term "primary lithium battery" to refer to a non-rechargeable battery

and the term "secondary lithium battery" to refer to a rechargeable battery. In most cases, this distinction will differentiate between different battery technologies. Although we understand that the distinction is being called into question by technological and market developments, we believe the regulatory definitions continue to have merit at this time, recognizing that further regulatory refinement will be necessary to respond to further technological developments and our growing understanding of transportation risks.

Transportation mode. The consequence of a lithium battery-related fire depends largely on the transportation context. In weighing the costs and benefits of regulation, we consider the mode of transportation and impose the strictest standards in air

transportation, particularly passenger service. Although most battery-related fires have caused only property damage or delays in ground transportation, even a small fire aboard an in-flight aircraft threatens catastrophic consequences.

Battery size. The degree of risk posed by lithium batteries is largely a function of the amount of stored energy, which is in turn a function of the number and relative lithium content of battery cells. These size standards are the accepted categorization of lithium batteries under the United Nations Recommendations and international regulatory bodies such as the International Civil Aviation Organization (ICAO). A cell is a single electro-chemical unit; a battery consists of one or more connected cells. The size of a cell or battery is determined by its lithium content, as summarized in the following chart:

TABLE 1.—BATTERY AND CELL CATEGORY DEFINITIONS

	Small (no more than)	Medium (between)	Large (more than)
Cells:			
Primary	1 g Li.	1 g and 5 g Li.	5 g Li.
Secondary	1.5 g ELC.*	1.5 g and 5 g ELC.	5 g ELC.
Batteries:			
Primary	2 g Li.	2 g and 25 g Li.	25 g Li.
Secondary	8 g ELC.	8 g and 25 g ELC.	25 g ELC.

* ELC (Equivalent Lithium Content).

Quantity. The number of lithium batteries in a shipment can also affect the severity of an incident. For example, several thousand small lithium batteries consolidated together present a higher potential risk than a shipment of a single lithium battery, because one burning primary lithium or secondary lithium battery can produce enough heat and energy to propagate to other lithium batteries in the same overpack, freight container, or cargo hold.

Product Design, Package Integrity, and Transportation Handling. The risks that a lithium battery will short-circuit or rupture are a function of design, packaging, and handling. As with many hazardous materials, the risk of a transportation incident involving lithium batteries can be reduced by strengthening packaging and reducing the likelihood and impact of rough handling. The amendments adopted here include tightened testing standards to ensure that batteries that pose the greatest risk in transportation are designed to withstand normal conditions of transportation and packaged to minimize risks of mishandling or damage in transit.

Emergency Response. In developing the final rule, we paid special attention

to the potential consequences of lithium battery-related fires. Although we take fire hazards seriously in all modes, we must be particularly concerned about the possibility of an uncontrolled fire aboard an aircraft.

To evaluate the hazards posed by primary lithium batteries in air transportation, FAA's Technical Center initiated a series of tests to assess their flammability characteristics. FAA published a technical report detailing the results of the tests in June 2004 (DOT/FAA/TAR-04/26). The battery tests were designed to test the batteries in an environment that is similar to actual conditions possible in a suppressed cargo fire. The FAA tests showed that the packaging materials delayed the ignition of the batteries, but eventually added to the fire loading and contributed to the battery ignition, even after the original (alcohol) fire had been exhausted. In addition, the packaging material held the batteries together, allowing the plastic outer coating to fuse the batteries together. This enhanced the probability of a burning battery igniting adjacent batteries, increasing the propagation rate. The technical report, which can be found in the docket for

this rulemaking, concluded that the presence of a shipment of primary lithium batteries can significantly increase the severity of an in-flight cargo compartment fire.

In addition, the report concluded that primary lithium batteries pose a unique threat in the cargo compartment of an aircraft because primary lithium battery fires cannot be suppressed by means of Halon, the only FAA-certified fire suppression system permitted for use in cargo compartments of a passenger-carrying aircraft operating in the United States.

FAA also conducted a series of test to determine the flammability of secondary lithium batteries and cells and issued a final report detailing the results in September 2006 (DOT/FAA/AR-06/38). This report can be found in the docket for this rulemaking. Flames produced by the batteries are hot enough to cause adjacent cells to vent and ignite. The report also concluded that Halon is effective in suppressing the electrolyte fire and preventing any additional fire from subsequent cell venting. The lithium-ion cells will continue to vent due to high temperatures but will not ignite in the presence of Halon.

B. LAX Incident and NTSB Recommendations

The notices of proposed rulemaking (NPRMs) in these proceedings both tied the need for tighter safety standards to an April 28, 1999 fire at Los Angeles International Airport (LAX). The LAX incident involved a shipment of two pallets of primary lithium batteries that caught fire and burned after being off-loaded from a Northwest Airlines flight originating in Osaka, Japan. The two pallets involved in the fire contained 120,000 small primary lithium batteries that were excepted from domestic and international regulatory requirements applicable to hazard communication (i.e., marking, labeling, and shipping papers) and packaging. The packages on the pallets were damaged during handling at LAX, and this damage is believed to have initiated the subsequent fire. Northwest ground employees initially fought the fire with portable fire extinguishers and a fire hose. Each time the fire appeared to be extinguished, it flared up again.

The LAX incident illustrated the unique transportation safety problems posed by lithium batteries, including the risk of rough handling in transit, resulting short-circuiting, thermal runaway, ignition of adjacent batteries, and the ineffectiveness of halon as an extinguishing agent.

The NTSB conducted a full investigation of the LAX incident. The NTSB's final report, issued November 16, 1999, included five safety recommendations addressed to RSPA:

A-99-00: Together with the Federal Aviation Administration, evaluate the fire hazards posed by lithium batteries in an air transportation environment and require that appropriate safety measures be taken to protect aircraft and occupants. The evaluation should consider the testing requirements for lithium batteries in the United Nation's Transport of Dangerous Goods Manual of Tests and Criteria, the involvement of packages containing large quantities of tightly packed batteries in a cargo compartment fire, and the possible exposure of batteries to rough handling in an air transportation environment, including being or abraded open.

A-99-01: Pending completion of your evaluation of the fire hazards posed by lithium batteries in an air transportation environment, prohibit the transportation of lithium batteries on passenger-carrying aircraft.

A-99-02: Require that packages containing lithium batteries be identified as hazardous materials, including appropriate marking and labeling of the packages and proper identification in shipping documents, when transported on aircraft.

A-99-03: Pending completion of your evaluation of the fire hazards posed by lithium batteries in an air transportation

environment, notify the International Civil Aviation Organization's Dangerous Goods Panel (ICAO DGP) about the circumstances of the fire in the Northwest Airlines cargo facility at Los Angeles International Airport on April 28, 1999. Also pending completion of your evaluation of the fire hazards posed by lithium batteries in an air transportation environment, initiate action through the Dangerous Goods Panel to revise the Technical Instructions for the Safe Transportation of Dangerous Goods by Air to prohibit the transportation of lithium batteries on passenger-carrying aircraft.

A-99-04: Initiate action through the Dangerous Goods Panel to revise the Technical Instructions for the Safe Transportation of Dangerous Goods by Air to require that packages containing lithium batteries be identified as hazardous materials when transported on aircraft.

C. Additional Incidents

The April 1999 LAX incident was not an isolated event; numerous incidents involving lithium batteries have been reported in the intervening years, most in the period since we initiated these rulemaking proceedings. Fortunately, none of the aviation-related incidents has resulted in death or serious injury; most of the incidents occurred either before or after flight. Some of these additional incidents are described below:

- On November 3, 2000, in Portland, Oregon, a small primary lithium battery short-circuited, causing a small fire and rupture of the battery. The primary lithium battery burned through its inner packaging and charred an adjacent package. The short-circuited battery had long flexible protruding positive and negative terminals.

- On April 12, 2002, small primary lithium batteries packaged in a fiberboard box ignited during handling in Indianapolis, Indiana.

- On August 9, 2002, a small secondary lithium battery in an electronic handheld device short-circuited, causing surrounding packing materials (bubble wrap) to catch fire.

- On August 7, 2004, large prototype secondary lithium batteries shipped under a competent authority approval from California to Europe apparently started a fire in a unit load device (ULD) during loading for a transatlantic flight (Memphis-Paris). The ULD and many other packages in it were damaged or destroyed by fire.

- On February 11, 2005, an undeclared package containing 18 small primary lithium batteries caught fire during unloading in White Bear Lake, Minnesota. Cargo handlers reported hearing a "pop" sound and then seeing the box "lifted" off the conveyor belt by the force. The package had been flown from Los Angeles to Minneapolis and

was to be trucked to Clear Lake, Wisconsin.

- On or about June 29, 2005, the contents of a ULD caught fire onboard a flight from Shanghai, China to the United States. Airline ground personnel discovered evidence of the fire after the plane landed safely in Ontario, California. A package containing a secondary lithium battery pack was identified as the source of the fire.

- On March 3, 2006, a U.S.-bound package containing secondary lithium batteries ignited in an outbound air transport station in Shenzhen, China.

- On July 17, 2006, a package with no marking or labeling containing 122 secondary lithium batteries of various sizes caught fire while being held in bond for customs clearance in Korea, after transportation by air from Vienna, Austria.

- On February 10, 2007, shortly after takeoff of a commercial flight, a fire ignited in a passenger bag stowed in an overhead bin. Although the fire is still under investigation, preliminary reports indicate both small lithium ion and small primary batteries were involved in the incident.

- On March 1, 2007, a package sent by an eBay vendor via the United States Postal Service, containing 24 primary lithium batteries, caught fire at the Sydney Australia Mail Gateway Facility. The package had been transported to Sydney from Los Angeles on a passenger aircraft.

D. Recalls

In August and October of 2006 and March of 2007, several leading computer manufacturers recalled nearly 10 million notebook computer secondary lithium batteries based on manufacturing defects. The batteries in the 2006 recalls, manufactured by Sony Energy Devices Corporation, were voluntarily recalled in coordination with the U.S. Consumer Product Safety Commission (CPSC). According to CPSC reports, these defective secondary lithium batteries can spontaneously overheat and cause fires. The batteries in the March 2007 voluntary recall were manufactured by Sanyo Electric Company, Ltd. and designed to be extended-life batteries for Lenovo ThinkPad notebook computers. According to CPSC, the Sanyo lithium-ion batteries pose a fire hazard if the battery is struck forcefully on the corner (e.g., a direct fall to the ground).

E. Regulatory Actions To Address Transportation Risks Posed by Lithium Batteries of All Types

As we explained above, the regulatory actions we are taking today are part of

a broader and ongoing effort to address the transportation risks posed by lithium batteries. Even as the measures adopted in this final rule progressed through the rulemaking process, more data surfaced concerning lithium battery risks. These developments have lent further support to the proposed approaches and spurred additional proposals for regulatory and non-regulatory change.

Inevitably, further technological advances, new product development, and market shifts will drive continued change in risks and benefits. We are committed to addressing those changes in a manner that safeguards our transportation systems and the traveling public, while promoting positive technological advances and minimizing regulatory costs and burdens for consumers and industry, including small businesses. To that end, we will continue to collect and analyze data concerning the risks posed by batteries and battery-powered devices of all types. We are committed to working with all affected stakeholders to identify risks and develop solutions, especially including non-regulatory solutions. In keeping with DOT regulatory policies and procedures, we will analyze the effectiveness of our rules over time, with a commitment to updating or eliminating any regulations that become unnecessary or unduly costly with changes in technology or transportation operations.

Recognizing that the risk and benefit profile is and has been dynamic, the final rule adopted today is best understood against the backdrop of existing and ongoing regulatory actions, including the separate rulemaking proposals that gave rise to this consolidated proceeding. By way of background, we begin with a discussion of regulatory requirements in place at the time of the LAX incident and NTSB recommendations.

1. *Regulatory Requirements Prior to Adoption of this Final Rule.* Under the Hazardous Materials Regulations (HMR, 49 CFR Parts 171–180), most lithium batteries and cells of all types and equipment containing or packed with lithium batteries or cells of all types are regulated as a Class 9 (Miscellaneous) hazardous material. A Class 9 material is one that presents a hazard during transportation, but that does not meet the definition of any other hazard class. The HMR require lithium batteries to be tested in accordance with a series of tests in Section 38.3 of the UN Test Manual. The tests are designed to ensure that a battery design type is capable of withstanding conditions encountered in transportation. The tests

include: (1) Test T.1 Altitude simulation, (2) Test T.2 Thermal test, (3) Test T.3 Vibration, (4) Test T.4 Shock, (5) Test T.5 External short circuit, (6) Test T.6 Impact, (7) Test T.7 Overcharge, and (8) Test T.8 Forced discharge. In addition, lithium batteries and cells must be: (1) Equipped with an effective means of preventing short circuits; (2) packaged in UN standard packagings meeting the Packing Group II performance level; and (3) identified on shipping papers and by package markings and hazard warning labels. See § 173.185(e).

Section 173.185 of the HMR contains exceptions from the packaging and hazard communication requirements of the HMR for small and medium-size lithium batteries and cells. Small and medium-size lithium batteries and cells must be packaged in strong outer packagings, and in a manner to protect against short circuits, but UN standard packagings are not required, and the requirements in Part 172 of the HMR applicable to shipping papers, marking, labeling, and emergency response information do not apply. Small lithium batteries and cells are also excepted from testing in accordance with the UN Test Manual.

2. *Changes to International Regulations.* Acting on a proposal by the United States, in December 2000, the United Nations Sub-Committee of Experts on the Transport of Dangerous Goods revised the UN Recommendations to: (1) Revise the lithium battery testing requirements in the UN Test Manual to provide more precise descriptions of the testing procedures and criteria and require more extensive testing to measure temperature, altitude, vibration, shock, impact, overcharge, forced discharge and intentional short; (2) eliminate an exception that permitted medium-size lithium batteries to be transported as unregulated material; (3) require testing of small lithium batteries to ensure they can withstand conditions encountered during transportation; (4) impose hazard communication and packaging requirements for small lithium batteries; and (5) provide exceptions for passengers and crew to carry lithium battery-powered equipment aboard an aircraft. These revisions were subsequently included in the 2003–2004 ICAO Technical Instructions. As a result of these revisions to the international regulations, NTSB classified recommendations A–99–83 and –84 as “Closed-Acceptable Alternate Action.”

3. *HM–224C Rulemaking.* On April 2, 2002, we issued an NPRM (HM–224C; 67 FR 15510) proposing changes to current HMR requirements for the

transport of lithium batteries consistent with the changes adopted in the UN Recommendations and ICAO Technical Instructions. These amendments were intended to improve the safety of lithium batteries in transportation and harmonize U.S. and international standards. Specifically, we proposed to: (1) Adopt the revised lithium battery test scheme in the UN Test Manual; (2) eliminate the exception for medium-size lithium batteries; (3) require testing of small lithium batteries; (4) impose hazard communication and packaging requirements for small lithium batteries; and (5) provide exceptions for passengers and crew to carry lithium battery-powered equipment aboard an aircraft.

4. *HM–224E Rulemaking.* Based in part on the June 2004 FAA technical report concerning the flammability characteristics of primary lithium batteries, discussed earlier in this preamble, on December 15, 2004, PHMSA published an interim final rule (IFR; Docket HM–224E; 69 FR 75208) prohibiting the shipment of primary lithium batteries as cargo on passenger-carrying aircraft. The IFR prohibits the offering for transportation and transportation in commerce of primary lithium batteries and cells, and equipment containing or packed with large primary lithium batteries (i.e., batteries containing greater than 25 grams of lithium) as cargo aboard passenger-carrying aircraft. In addition, equipment packed with or containing small or medium-size primary lithium batteries (i.e., batteries containing 25 grams or less of lithium) must be transported in accordance with Special Provisions A101 or A102. Under these Special Provisions, a primary lithium battery or cell packed with or contained in equipment may not exceed a net weight of 5 kg (11 pounds). Finally, the outside of each package that contains a primary lithium battery or cell forbidden for transport aboard passenger-carrying aircraft must be marked “PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT.”

5. *Additional Recent Amendments to International Regulations.* At the international level, interest in the safe transportation of lithium batteries continues to grow as the number of lithium battery incidents (including non-transportation-related fires and product recalls) increases. The following activities and discussions of the ICAO Dangerous Goods Panel and the UN Sub-Committee of Experts on the Transport of Dangerous Goods signal further safety enhancements to the

ICAO Technical Instructions and UN Recommendations:

At its 2006 meeting (October 25—November 3, 2006), the ICAO Dangerous Goods Panel further considered amendments to the ICAO Technical Instructions concerning lithium battery safety. Based on a recommendation by the Panel, the ICAO Air Navigation Commission agreed to issue an addendum to the ICAO 2007–2008 Technical Instructions to prohibit the transport of lithium batteries that have the potential of producing a dangerous evolution of heat, fire, or short circuit as a result of being damaged or defective (e.g., those being returned to the manufacturer for safety reasons).

In December 2006, the United Nations Committee of Experts on the Transport of Dangerous Goods, based in part on U.S. proposals, revised Special Provision 188 (SP 186) of the UN Recommendations to address the risk that lithium cells and batteries currently exempted from regulation may short circuit in transportation. These

revisions (1) require individual packaging of lithium cells or batteries, (2) require protection against short circuits, accidental activation, and outer packaging of lithium battery-powered equipment; (3) eliminate the current exception from marking, documentation, drop testing, and gross weight limit for packages containing less than 24 lithium cells or 12 lithium batteries, and (4) standardize marking requirements for lithium batteries. Additionally, the UN Recommendations were amended to include separate dangerous goods list entries for metallic lithium and lithium ion batteries to assist shippers, transport personnel, and carriers in complying with the applicable regulations.

PHMSA will carefully review any amendments to the international regulation and will consider further rulemaking action based on a robust notice and comment process. As previously stated, we are committed to working with all affected stakeholders

to evaluate risks and develop potential solutions, especially non-regulatory solutions.

II. Provisions of this Final Rule

The continuing incidents and recalls and the results of the FAA testing discussed above reinforce the actions we are taking in this final rule and the need for ongoing analysis of the transportation risks presented by lithium batteries. As we explain in the following sections, the provisions of this final rule will provide additional protection against all lithium battery-related fires, regardless of their source, by enhancing hazard communication and emergency response and limiting transportation options based on the availability of effective fire suppression technology. This final rule addresses the proposals advanced in 2002 under Docket HM–224C and the provisions of the 2004 IFR published under Docket HM–224E. The following tables are provided for your convenience:

As a result of HM–224E IFR the following requirements are already in effect:

- Primary lithium batteries are forbidden for transport aboard passenger aircraft.
- Primary lithium batteries transported by any means other than passenger aircraft must be marked "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT".

The following provision pertaining to lithium batteries is unchanged by this combined final rule:

- Requirements for large lithium batteries (> 25 grams).

The following provisions have been modified as a result of this combined final rule:

- Section 175.10(a)(17) in that the equipment containing batteries and spares must be in carry-on luggage.

The following new requirements will take effect as a result of this combined final rule:

- The exception for medium batteries is eliminated by aircraft and vessel.
- Small battery exception from UN testing is eliminated.
- A new marking paperwork requirement is added for medium batteries shipped as excepted via highway and rail transportation.
- A new marking paperwork requirement is added for small batteries that are shipped excepted.

A. Docket HM–224C**1. Background: Proposed Requirements**

As mentioned above, our April 2, 2002, NPRM (67 FR 15510) proposed to: (1) Adopt the revised lithium battery test scheme in the UN Test Manual; (2) eliminate the current exceptions for medium-size lithium batteries of all types; (3) require testing of small lithium batteries of all types; (4) impose hazard communication and packaging requirements for small lithium batteries

of all types; and (5) provide exceptions for passengers and crew to carry lithium battery-powered equipment aboard an aircraft.

On June 15, 2005, we published an Initial Regulatory Flexibility Analysis (IRFA) (70 FR 34729) and requested comments on the potential small business impacts of the proposals in our April 2, 2002 NPRM. The issues raised by commenters to the IRFA are addressed in this document and the final regulatory flexibility analysis

(FRFA), which can be found in the public docket for this rulemaking.

2. Discussion of Comments to HM–224C

PHMSA received 22 written comments on the NPRM and the IRFA in this proceeding. The following companies, organizations, and individuals submitted comments, which are discussed in detail in this section:

Electronic Industries Alliance (EIA; RSPA–2002–11989–3 and 16)

David Linden (Linden; RSPA-2002-11989-4)
 Intel Corporation (Intel; RSPA-2002-11989-5)
 National Electrical Manufacturers Association (NEMA; RSPA-2002-11989-6)
 FEDCO Electronics, Inc. (FEDCO; RSPA-2002-11989-7, 12, 18, 24)
 Argonne National Laboratory (ANL; RSPA-2002-11989-8)
 National Transportation Safety Board (NTSB; RSPA-2002-11989-9)
 Portable Rechargeable Battery Association (PRBA; RSPA-2002-11989-10, 19, 25)
 Air Line Pilots Association International, Inc. (ALPA; RSPA-2002-11989-11)
 Air Transport Association of America (ATA; RSPA-2002-11989-13)
 Air Line Pilots Association, International (ALPA; RSPA-2002-11989-14)
 Mark S. Dittmore (Dittmore; RSPA-2002-11989-15)
 Valance Technology, Inc. (Valance; RSPA-2002-11989-20)
 SION Power (SION; RSPA-2002-11989-22)
 Cramer Law Group on behalf of SkyBitz Inc., (SkyBitz; RSPA-2002-11989-23)
 ACR Electronic Inc (ACR; RSPA-2002-11989-25)
 David Hadfield (RSPA-2002-11989-27)
 a. *Elimination of the Exception for Medium-size Lithium Cells and Batteries.* In the NPRM, we proposed to eliminate the exception from most HMR requirements for medium-size lithium cells (including when packed or contained in equipment) containing 5 grams or less of lithium or lithium alloy and batteries (including when packed or contained in equipment) containing not more than 25 grams of lithium or lithium alloy per battery if they pass tests specified in Section 38.3 of the UN Test Manual. With the elimination of this exception, medium-size lithium batteries and cells of all types would have to be transported as Class 9 hazardous materials and conform to all associated hazard communication and packaging requirements. This exception has already been removed from the IMDG Code and the ICAO Technical Instructions, effectively requiring these lithium batteries to be transported as Class 9 materials when transported internationally by aircraft or vessel and in regulations applicable in other countries and regions throughout the world (e.g. European Road and Rail Agreements (ADR/RID)).
 Several commenters urge PHMSA to retain this exception for domestic surface transportation. The Portable

Rechargeable Battery Association (PRBA) states that retention of the exception for medium-size lithium batteries of all types will have the largest positive effect on reducing the cost impacts on small businesses and recommends PHMSA retain the exception for lithium-ion batteries containing no more than 16 grams of equivalent lithium content shipped at a state of charge of no more than 50%. PRBA states testing data clearly show that the degree to which a lithium-ion cell reacts to abuse is significantly affected by state of charge. PRBA also suggests we should consider retaining the exception for medium-size lithium batteries when the batteries are contained in or packed with equipment and shipped by ground only. PRBA states this exception would substantially reduce costs associated with shipping products as Class 9 materials and cover a significant number of products shipped by small businesses.

In response to the proposal to eliminate the exception of medium sized batteries, Valance Technology, Inc. states PHMSA did not provide sufficient justification for eliminating the exception. SION Power asserts eliminating the exception for medium-size lithium batteries will adversely affect its commercial development and suggests that, in the case of primary lithium batteries, eliminating the exception will limit the size of batteries using smaller cells. SkyBitz favors scaling back the exception for medium-size lithium batteries by limiting the number of cells or batteries per package, rather than eliminating the exception. ACR Electronics, Inc. states PHMSA should retain the exception for medium-size lithium batteries provided they are contained in strong, waterproof safety equipment.

We continue to believe that significant safety benefits can be achieved by requiring medium-size lithium batteries and cells of all types to be shipped with appropriate hazard communication information. As recent incidents demonstrate, the hazards associated with these shipments should be communicated to transport workers and emergency response personnel to ensure safe handling in transportation and appropriate incident response actions. We are not convinced that requiring medium-size batteries to be transported with appropriate hazard communication information will impede the development or marketing of these batteries.

However, the comments raise legitimate concerns about the costs that may be incurred by companies,

particularly small businesses, if we were to remove the exception in its entirety. Therefore, in this final rule we are eliminating the exception for medium-size lithium batteries and cells of all types transported by aircraft or vessel, but retaining a limited exception for ground transportation (i.e., motor vehicle and rail car). This action improves overall safety by reducing the risk of lithium battery-related incidents in the transport modes that are inherently most vulnerable to high consequence accidents, while minimizing the costs for businesses that ship lithium batteries by motor carrier or rail.

For medium-size lithium batteries and cells transported by motor carrier or rail, we are imposing more limited, less costly hazard communication requirements. Rather than requiring compliance with the hazard communication and packaging requirements applicable to Class 9 materials, in this final rule, we are adopting, with some revisions, a hazard communication and packaging program developed by industry. Under this program, a package containing medium-size lithium batteries and cells of all types must: (1) Be marked to indicate it contains lithium batteries and special procedures must be followed in the event that the package is damaged; (2) be accompanied by a document indicating the package contains lithium batteries and special procedures must be followed in the event that the package is damaged; (3) weigh no more than 30 kilograms; and (4) be capable of withstanding a 1.2 meter drop test. For those packages that are not prepared for air shipment, (i.e., not offered and transported as a Class 9 material) we are requiring that the package be marked to indicate that they may not be transported by aircraft or vessel. In this final rule, the provisions applicable to the transportation of medium-size lithium batteries of all types are relocated from § 173.185 to Special Provision 189.

b. *Revisions to the Exceptions for Small Batteries.* Section 173.185(b) of the HMR provides significant exceptions from packaging and hazard communication requirements for small lithium cells and batteries. In addition, small lithium cells and batteries are not subject to the UN testing requirements. In the 2002 NPRM, we proposed to require testing of small lithium batteries and cells of all types in accordance with the UN Test Manual. We also proposed to require each package containing more than 24 lithium cells or 12 lithium batteries to be: (1) Marked to indicate that it contains lithium batteries and

that special procedures must be followed in the event that the package is damaged; (2) accompanied by a document indicating that the package contains lithium batteries and that special procedures must be followed in the event that the package is damaged; (3) no more than 30 kilograms gross weight; and (4) capable of withstanding a 1.2 meter drop test in any orientation without shifting of the contents that would allow short-circuiting and without release of package contents.

The NTSB supports the proposal to require all lithium batteries, including small lithium batteries and cells currently excepted from the HMR, to be tested in accordance with the revised UN Test Manual, and to require packages containing more than 12 small lithium batteries or 24 cells to be capable of passing a drop test. The NTSB suggests the proposed rule could be improved by requiring a package containing 12 small lithium batteries or 24 lithium cells to be classed as a Class 9 material, and subject to the labeling and shipping paper requirements of the HMR. The Airline Pilots Association International (ALPA) states it agrees new testing requirements are needed.

The Air Transport Association of America (ATA) supports the proposals in the April 2002 NPRM, but notes a number of its members are particularly concerned about the retention of the exception for small lithium batteries as proposed in the NPRM. ATA states such provisions will be confusing to transport workers involved in accepting, sorting and loading packages in air transportation. According to ATA, air carriers are concerned that an indication on a package that it contains "lithium batteries" may cause packages to be removed from the system for clarification or possible rejection. The removal of a package from the system could occur more than once during the transportation cycle.

ATA recommends PHMSA either regulate or deregulate such materials (with no exceptions) and not "band-aid" a situation that will present problems in transportation. ATA also states the safety risks associated with the transportation of small lithium batteries and cells are addressed if packages are "capable of withstanding a 1.2 meter drop test in any orientation without damage to cells or batteries contained in the package, without shifting of the contents that would allow short circuiting and without release of package contents."

FEDCO states that, including new batteries in active design, it has about twenty 1- and 2-cell primary lithium batteries and 13 new lithium-ion packs

containing from 2 to 12 cylindrical cells. FEDCO estimates the cost of having an independent testing facility, such as Underwriters Laboratories, perform the proposed tests would be about \$20,000 per battery design. In addition, FEDCO states the testing of its existing 450 primary lithium and secondary lithium battery designs will cost an additional \$9 million. FEDCO proposes an exception from the proposed tests for batteries and battery packs consisting of cells that have passed the UN tests; the exception would permit the batteries and battery packs to be transported without further testing.

FEDCO also makes the following recommendations to ease the financial impact on small business:

- (1) Except single-cell and two-cell primary lithium batteries from the UN Test Manual provided that the cells in the batteries have already passed those UN tests;
- (2) Provide manufacturers with a four-year "grandfather" period in which to comply with the new testing requirements for existing battery designs; and
- (3) Extend the exception in the UN Recommendations for small production runs of cells or batteries from 100 to 1,000 batteries.

SION Power recommends the following exceptions for small lithium batteries and cells: (1) Except single cell batteries from testing if the cells have already passed the UN tests; and (2) except prototype or small production runs of cells or batteries, defined as no more than 200 cells or 50 batteries, from the UN tests. As a precondition to these exceptions, SION Power suggests requiring that the base cell and battery pack pass a 55 °C short circuit test. SION Power further recommends shipment of prototype or small production runs as Class 9 materials.

PRBA requests the following changes to the NPRM:

- (1) Provide a four-year grandfather clause for testing small cells and batteries;
- (2) Adopt a 1,000-unit small production run exception from UN testing for certain small primary lithium and lithium-ion cells and batteries; and
- (3) Clarify that single-cell batteries do not require UN testing.

PRBA, FEDCO, SION, Valence Technology, ACR, SkyBitz Inc, EIA, and Intel Corporation all suggest an exception, consistent with the international regulations, from marking, packaging, and shipping paper requirements for equipment containing small lithium batteries and cells.

The UN Test Manual's lithium battery test methods are designed to measure

the capability of the cells or batteries to maintain their construction integrity against shorts in normal transport environments. Parameters considered include: Temperature, altitude, vibration, shock, impact, overcharge, forced discharge, and intentional short. The test criteria were developed to minimize the risk of lithium cells or batteries becoming an ignition (fire) source during transport. Once ignited, a fire may spread to other lithium batteries in the package. To ensure that small lithium batteries and cells will be transported in commerce only if they are able to withstand normal transport conditions, in this final rule, we are revising the HMR to subject small lithium batteries and cells to the test methods in the UN Test Manual.

Information from an independent testing laboratory, which is currently performing these tests, suggests the cost for performing the tests is \$6,000 per lithium battery design, and not \$20,000 or more as stated by some commenters. (Subsequent to the completion of our analysis, some testing laboratories have indicated to us that costs of performing the UN Tests have decreased to about \$4,000 to \$3,000). Further, not all lithium batteries and cells must be tested. In accordance with the UN Test Manual, section 38.3.2.1, only lithium batteries and cells that differ from a tested type by a change of more than 0.1 gram or more than 20% by mass, whichever is greater, to the cathode, to the anode, or to the electrolyte, must be tested.

The UN Test Manual states that a single cell lithium battery should be considered a cell and not a battery, regardless of whether the unit is termed a "battery" or a "single cell battery." Thus, a single cell lithium battery consisting of a cell that has passed the appropriate UN tests is a cell and need not be re-tested even if the components of the battery, other than the cell contained therein, are a new design type. Lithium batteries consisting of more than one cell are subject to the tests in the UN Test Manual.

We agree with those commenters who ask us to adopt a small-production-run exception for motor vehicle, rail and vessel transportation similar to the one in Special Provision 310 of the UN Recommendations for small lithium batteries and cells. Thus, we are adopting the following small-production-run exception for small lithium batteries and cells transported by motor vehicle, rail and vessel:

- (1) The cells and batteries must be transported in an outer packaging that is a metal, plastic, or plywood drum; or metal, plastic, or wooden box meeting

the criteria for Packing Group I packagings; and

(2) Each cell and battery must be individually packed in an inner packaging inside the outer packaging and surrounded by non-combustible, non-conductive cushioning material.

Consistent with the international standards, the exception will apply to production runs of up to 100 lithium batteries or cells of all types. This exception addresses the need to increase safety standards for these lithium batteries, while not imposing undue costs on the regulated community.

We agree with commenters who request an appropriate transition period for lithium battery manufacturers to test lithium battery designs that are currently on the market. Therefore, in this final rule, we are adopting a two-year compliance date for the testing of small lithium batteries and cells.

PHMSA agrees with the commenters who requested an exception from the marking, packaging and shipping paper requirements for equipment containing small lithium batteries and cells. We are adopting the exception in this final rule.

We continue to believe that the hazards associated with small lithium batteries should be communicated to transport workers so that they can handle packages appropriately. Therefore, in this final rule we are adopting the communication and packaging program developed by the industry, and described above, for small lithium batteries.

In summary, in this final rule, PHMSA is amending the HMR to require that small lithium batteries be tested in accordance with the UN Test Manual. In addition, we have adopted the proposed size standards for small lithium batteries thus eliminating the distinction between liquid and solid cathode lithium batteries. Unless contained in equipment, each package containing more than 24 lithium cells or 12 lithium batteries must also be:

(1) Marked to indicate it contains lithium batteries and special procedures must be followed in the event that the package is damaged;

(2) Accompanied by a document indicating the package contains lithium batteries and special procedures must be followed in the event that the package is damaged;

(3) No more than 30 kilograms gross weight; and

(4) Capable of withstanding a 1.2 meter drop test in any orientation without shifting of the contents that would allow short circuiting, and without release of package contents.

In accordance with § 173.21(c), electrical devices likely to create sparks

or generate a dangerous quantity of heat are forbidden for transportation unless packaged in a manner to preclude such an occurrence. In this final rule, we are adding language to clarify that the restrictions in § 173.21 of the HMR apply to lithium batteries of all types.

We note that adoption of hazard communication requirements for shipments of lithium batteries does not "classify" or "declassify" these materials as hazardous materials. Lithium batteries, regardless of their size (i.e., small, medium and large), are hazardous materials and are subject to applicable requirements in the HMR.

c. *Exceptions for Aircraft Passengers and Crew.* Consistent with amendments to the ICAO Technical Instructions, in the April 2002 NPRM we proposed to allow airline passengers and crew to carry consumer electronic devices containing lithium batteries. In addition, we proposed to allow passengers and crew to carry spare lithium batteries for such devices subject to limits as to lithium content, the number of batteries, and the type of lithium batteries. In the IFR adopted December 15, 2004 (Docket FM-224E), had we not amended § 175.10, airline passengers and crew would have been forbidden to carry consumer electronic devices powered by primary lithium batteries. As amended in the IFR, lithium batteries contained in equipment and spares of all types (primary and secondary) are authorized in carry-on or checked baggage. In this final rule, we are adopting the amendments proposed in the April 2002 NPRM to permit carriage by passengers and crew of lithium battery-powered consumer electronic devices and associated spare lithium batteries. We are also clarifying in this final rule that the proposed battery size limitation for spare batteries also applies to the batteries installed in the device. These amendments also state that spare lithium batteries may only be carried in carry-on luggage and that they must be individually protected against short circuits. Unprotected batteries are susceptible to short circuits when exposed to items typically carried by passengers and crew members, such as car keys and coins. We recommend that passengers protect spare batteries by placing them in protective cases or individual zip-top bags or placing non-conductive tape across exposed terminals. We note that ICAO is considering eliminating the passenger aircraft exception for medium-size (8–25 grams aggregate equivalent lithium content) batteries. If adopted by ICAO, we will consider adopting this in a future rule.

d. *Editorial Changes.* In the 2002 NPRM, we proposed to make several editorial changes to § 173.185 to help users better understand their obligations. First, we proposed to move the definition of "equivalent lithium content" and "lithium content" from former § 173.185(a) to § 173.8 and eliminate as unnecessary the first sentence of former § 173.185(a). Also, as proposed, we have removed the grandfather provision that was previously provided under § 173.185(d).

PRBA requested revisions to the definition of "equivalent lithium content" to provide that a lithium polymer battery based on lithium-ion chemistry or technology is regulated as a lithium-ion battery for purposes of determining equivalent lithium content. PRBA notes that the UN Test Manual definition for a lithium-ion cell or battery states "a lithium polymer cell or battery that uses the lithium-ion chemistries, as described herein, is regulated as a lithium-ion cell or battery."

Based on the comment from PRBA on the definition of "equivalent lithium content," in this final rule, we are adding a definition for "aggregate lithium content." Except for some minor differences, the other editorial amendments are adopted as proposed. In addition, we have made editorial amendments to §§ 171.11, 171.12, and 171.12a to address changes in regulatory citations.

We have also moved the provisions applicable to small lithium batteries from § 173.185 to Special Provision 188 for consistency with international regulations. We have also made some editorial changes to the exception related to the prohibition of primary lithium batteries aboard passenger aircraft in order to clarify the requirements. We also clarified the packaging requirements for lithium batteries packed with equipment. We inadvertently proposed to remove the requirement that lithium batteries or cells that are packed with the equipment are required to be packaged in specification packaging.

e. *Shipping Lithium Batteries for Recycling.* PRBA filed a petition for rulemaking on February 8, 2002 (P-1423), asking for an amendment to the HMR requirements for shipping spent lithium batteries for recycling. Currently, under the exception in § 173.185(h), lithium cells and batteries "for disposal" may be offered for transportation or transported to a permitted storage facility and disposal site by motor vehicle when they are equipped with an effective means of preventing external short circuits and

packed in a strong outer packaging conforming to the requirements of §§ 173.24 and 173.24a. Lithium batteries transported under this provision are excepted from the performance packaging requirements of Part 178 of the HMR.

Section 173.185(h) does not specifically address the transportation of lithium cells and batteries for recycling. In its comments to the NPRM, PRBA states that failure to include the change in the final rule will have significant implications for the Rechargeable Battery Recycling Corporation's used battery collection and recycling program. We agree with the comments of PRBA and others on expanding the exception for shipping lithium batteries for disposal to include lithium batteries shipped for recycling, and in this final rule have modified § 173.185(d) accordingly.

B. Docket HM-224E

1. Background: IFR Requirements

As explained above, on December 15, 2004, PHMSA published an IFR (Docket HM-224E; 69 FR 75208), prohibiting the shipment of primary lithium batteries as cargo on passenger-carrying aircraft. The IFR prohibits the offering for transportation and transportation in commerce of primary lithium batteries and cells, and equipment containing or packed with large primary lithium batteries (i.e., batteries containing greater than 25 grams of lithium) as cargo aboard passenger-carrying aircraft. In addition, equipment packed with or containing small or medium primary lithium batteries (i.e., batteries containing 25 grams or less of lithium) must be transported in accordance with Special Provisions A101 and A102. Under the IFR, Special Provision A101 specified that a primary lithium battery or cell packed with equipment may not exceed 5 kg (11 pounds) gross weight. On September 28, 2006, we issued a correction to Docket HM-224E, 71 FR 56894, revising Special Provision A101. The correction clarified that we intended the 5 kilogram limit to be net weight. In addition, in accordance with Special Provision A102, primary batteries or cells contained in equipment may not exceed 5 kg (11 pounds) net weight. Further, the IFR requires the outside of each such package that contains a primary lithium battery or cell forbidden for transport aboard passenger carrying aircraft to be marked "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT."

Under the IFR, for air shipments of non-excepted Class 9 primary lithium batteries and for shipments of equipment that contains or is packed with Class 9 primary lithium batteries, the words "Cargo Aircraft Only" must be entered after the basic description on shipping papers. The package must bear a CLASS 9 and a CARGO AIRCRAFT ONLY label, and the package must be otherwise marked as required by the HMR. The IFR applies to both foreign and domestic passenger-carrying aircraft entering, leaving, or operating in the United States and to persons offering primary lithium batteries and cells for transportation as cargo on any passenger-carrying aircraft.

The IFR resulted from an assessment by PHMSA and the FAA of recent lithium battery fires in air transportation, and the FAA technical report, discussed earlier in this preamble, evaluating the flammability of primary lithium batteries and the effect of air carrier fire suppression systems on primary lithium battery fires.

2. Discussion of Comments in HM-224E

On January 27, 2005, PHMSA conducted a public meeting to provide an informal forum for interested persons to offer comments on the IFR. Six persons made oral presentations at the public meeting. In addition, we received 38 written comments from private citizens and the following companies and organizations:

Karin Rindal (RSPA-2004-19886-4)
 Dolaine Arnold (RSPA-2004-19886-5)
 McDowell Research, Ltd. (RSPA-2004-19886-6)
 Rollic Herman (RSPA-2004-19886-7)
 Homer C. Lambert (RSPA-2004-19886-10)
 Portable Rechargeable Battery Association (PRBA; RSPA-2004-19886-39, 44)
 Information Technology Industry Council (ITI; RSPA-2004-19886-41)
 Solelectron Corporation (RSPA-2004-19886-42)
 CTIA—The Wireless Association (RSPA-2004-19886-40)
 National Electrical Manufacturers Association (NEMA; RSPA-2004-19886-23, 24, 38)
 FEDCO Electronics, Inc. (RSPA-2004-19886-12, 13)
 Dangerous Goods Advisory Council (RSPA-2004-19886-11)
 Liferaft and Marine Safety (RSPA-2004-19886-14)
 Anthony Affisio (RSPA-2004-19886-15)
 DEC Marine Safety Systems Ltd (RSPA-2004-19886-16)
 Lucent Technologies (RSPA-2004-19886-18)

Siemens AG (RSPA-2004-19886-9)
 Rockwell Automation (RSPA-2004-19886-20)
 Intel Corporation (RSPA-2004-19886-21)
 Honeywell Corporate (RSPA-2004-19886-17, 22)
 FedEx Express (RSPA-2004-19886-25)
 URS Corporation (RSPA-2004-19886-26)
 United States Marine Safety Association (RSPA-2004-19886-27)
 Federation Industries Electriques (RSPA-2004-19886-28)
 ZVEI (RSPA-2004-19886-29, 31)
 SAFT America Inc. (RSPA-2004-19886-30, 32)
 Air Transport Association of America, Inc. (RSPA-2004-19886-33)
 Air Line Pilots Association, International (ALPA; RSPA-2004-19886-34)
 Automated Media Systems (RSPA-2004-19886-35)
 Switlik Parachute Co. Inc. (RSPA-2004-19886-36)
 Fisher Scientific Company, L.L.C. (RSPA-2004-19886-37)
 The International Brotherhood of Teamsters Airline Division (Teamsters; RSPA-2004-19886-43)

All comments submitted to the Dockets Management System, under Docket Number PHMSA-04-19886 (HM-224E) and comments received at the public meeting have been considered in developing this final rule. The comments are addressed in detail below. Several commenters submitted comments that were outside the scope of this rulemaking. They are not discussed in this preamble.

a. *Prohibition of Primary Lithium Batteries and Cells Aboard Passenger Aircraft.* The IFR imposed a limited prohibition on offering for transportation and transportation of primary lithium batteries and cells as cargo aboard passenger-carrying aircraft and equipment containing or packed with large primary lithium batteries. Under the IFR, only small or medium-size primary lithium batteries packed with or contained in the equipment for which they are intended to provide power are permitted to be transported as cargo aboard passenger-carrying aircraft.

Several commenters oppose the prohibition adopted in the IFR. For example, NEMA suggests the record does not support the ban of cargo shipments of primary lithium batteries and lithium batteries packed with or contained in equipment aboard passenger aircraft. NEMA requested that the exception for 5 kg (11 pounds) net weight of batteries packed in equipment be extended to shipments of primary

lithium batteries shipped without equipment. NEMA also recommends PHMSA allow, consistent with international requirements, shipments of up to 12 batteries and 24 cells of batteries to be transported in accordance with the exception in § 173.185(b) of the HMR. NEMA states it is unclear how PHMSA could determine shipments of such products packed with or contained in equipment could pose a serious risk in air transportation when there has been no testing of primary lithium batteries in equipment.

Several commenters recommend PHMSA retract the IFR and issue a final rulemaking to harmonize the HMR with standards for transporting lithium batteries in the UN Recommendations or ICAO Technical Instructions. These commenters suggest harmonization would alleviate the confusion caused by the different lithium battery weight limits, exemptions, and testing requirements in the HMR and the international transportation regulations.

Two commenters address the April 28, 1999 LAX incident mentioned in the IFR. These commenters suggest the incident occurred under atypical handling procedures and was the direct result of inadequate packaging. SAFT America states improved packaging requirements, mandatory testing of all primary lithium batteries and cells in accordance with the UN Recommendations, and procedures to quarantine damaged shipments would successfully address the root cause of the incident. This commenter further states all other incidents involving primary lithium batteries and cells involved improper packaging or batteries contained in checked or carry-on baggage; the commenter notes that neither of these situations is addressed in the IFR. FedEx suggests packaging for all battery types must be reviewed and better packaging requirements must be developed to prevent fires and recommends further studies to identify an effective extinguishing agent for lithium batteries.

Several commenters express concern the IFR will result in unacceptable economic burdens on the industry and will adversely affect the efficiency with which primary lithium batteries and cells are transported. FEDCO states the majority of its sales are to distributors and dealers of computer products and to battery retail stores, with major competition from foreign importers of primary lithium batteries. FEDCO expresses concern that most foreign importers of primary lithium batteries are "under the radar" in so far as PHMSA is concerned. FEDCO asserts its personnel have seen numerous cases

where foreign importers have shipped regulated and hazardous primary lithium batteries by air with inadequate packaging and virtually no insulation that would prevent the batteries from short circuiting. FEDCO suggests PHMSA needs to develop methods of policing the practices of foreign importers of primary lithium batteries before a serious incident occurs.

Fisher Scientific Company, L.L.C. states it has found individual primary lithium batteries, whether shipped installed or with equipment, do not represent a hazard during transportation. Fisher Scientific states it has shipped well over 10,000 shipments of primary lithium batteries over a period of 20 years, with no transportation incidents attributable to the batteries, and it requests an exception from the HMR for single batteries classified as dry (e.g. consumer alkaline), or lithium or lithium ion batteries. Fisher Scientific suggests an exception for small primary lithium batteries would provide an adequate level of safety with a minimum of operational disruption and no negative economic impacts.

We do not agree with those commenters who urge withdrawal of the IFR. Although we are hopeful that intervening technological advances will make lifting the prohibition feasible in the future, until we can be satisfied that primary lithium batteries will not ignite in flight and/or that any such fire could be suppressed by standard fire suppression systems in passenger aircraft cargo compartments, we cannot sanction the shipment of primary lithium batteries as cargo in passenger aircraft. Incident reports and test data indicate primary lithium batteries present unique and serious risks if transported as cargo on passenger-carrying flights. The FAA report concludes that primary lithium batteries self-propagate once the lithium in a single battery begins to burn. Because of this, lithium batteries that are not involved in the initial fire may still ignite and propagate. In addition, the only FAA-certified fire suppression system authorized for use in a passenger-carrying aircraft cannot extinguish or suppress a primary lithium battery fire.

For those reasons, PHMSA and FAA continue to believe the prohibition on the transportation of primary lithium batteries on passenger aircraft is appropriate and well-founded. Although some commenters questioned the original justification for the IFR, intervening developments have buttressed the record, calling further attention to primary lithium battery

risks and strengthening the case for final regulatory action. We take these risks seriously, recognizing the potential for catastrophic harm in any passenger airline accident and the relative availability of transportation alternatives. When it comes to safeguarding airline travel, we intend to be proactive, identifying and addressing the most serious safety risks before they result in costly accidents. Although we insist that regulatory actions be data-driven, we will not wait for accidents to address known risks. In the case of primary lithium batteries, although the evidence of transportation-related risks is mounting, no incident has resulted in serious injury or loss of life. Far from demonstrating that the prohibition is unnecessary, this safety record could well reflect the fact that the IFR has been in place for over two years.

We disagree with those commenters who contend that imposing more robust packaging requirements would address the safety risks posed by shipment of primary lithium batteries as cargo aboard passenger planes. These comments do not address the central fact that the fire suppression system in an aircraft cargo compartment is ineffective in suppressing a fire involving lithium batteries. The aircraft cargo compartment fire scenario of concern to PHMSA and FAA is not limited to a fire initiated by the primary lithium batteries, but includes a fire started by an outside source. Increasing packaging integrity and improved compliance do not address this significant concern. As we indicated in the preamble to the IFR, a primary lithium battery involved in a fire in a passenger aircraft cargo compartment could overcome the safety features of the cargo compartment. Further, primary lithium batteries are capable, on their own, of initiating a fire that could have catastrophic consequences. The FAA report on the flammability characteristics of primary lithium batteries raises significant concerns justifying our conclusion that they should be prohibited aboard passenger-carrying aircraft.

PHMSA generally agrees with the commenters that the continually increasing amount of hazardous materials transported in international commerce warrants the harmonization of domestic and international requirements to the greatest extent possible. Harmonization facilitates international transportation, while promoting the safety of people, property and the environment. Our goal is to harmonize without diminishing the level of safety currently provided by the HMR and without imposing undue

burdens on the regulated public. However, we are obligated to impose additional requirements when the international standards do not adequately protect the American public. Over time, we expect increased harmonization of domestic and international standards as both regimes continue to address the transportation risks posed by the growing use of lithium battery technology.

b. *Battery Testing.* The Portable Rechargeable Battery Association (PRBA) expresses concern about the manner in which the FAA tests on primary lithium batteries were conducted, the conclusions reached, and the regulatory steps taken. Specifically, PRBA contends:

(1) PHMSA has not shown that the FAA fire testing of primary lithium batteries and cells represents realistic conditions that could be encountered in air transportation and pose an unreasonable risk to the traveling public.

(2) The FAA test results do not provide a rational basis for the IFR, particularly when compared with other FAA cargo compartment fire tests.

(3) It is unlikely that the pressure rise caused by burning primary lithium batteries would lead to an overpressure of an aircraft cargo compartment.

(4) The fire tests are arbitrary and more severe than the other tests used to evaluate the hazards of other chemicals and articles.

(5) The effects of packaging material for shipments of primary lithium batteries were largely ignored in the FAA tests.

(6) Primary lithium batteries were subjected to extreme temperature testing when in a separate proposed rulemaking (Docket HM-224B) PHMSA proposed to subject packaged oxygen cylinders carried in passenger cargo compartments to a temperature of only 400° F.

For the following reasons, we do not agree with the PRBA comments. The FAA tests demonstrated that the lithium output from a single burning primary lithium battery is sufficient to penetrate single-layer cargo linings. Once penetration occurs, the ability of Halon to suppress a fire is reduced, and the fire can spread throughout the cargo compartment. Similarly, most cargo containers used in commercial shipments (roughly 90%) have only a single lining. Small numbers of burning primary lithium batteries can also raise the pressure pulse in a cargo container to the level at which the walls of the containers separate (1 psi). Separation of the cargo container raises the same concerns as perforation of the

containers. In the FAA tests, one brand of primary lithium batteries required only three burning batteries to raise the pressure pulse above 1 psi, while the two other brands required only four primary lithium batteries to reach the same psi. The pressure tests were added to the test protocol on the basis of initial test results; the FAA was surprised to see pressure changes in the tested compartment in the single-battery tests. Cargo containers are designed to only support 1 psi because they need to be suitable for depressurization. A more robust cargo compartment would be incompatible with the need for a depressurized environment.

Temperatures in a suppressed cargo compartment fire can be above the auto-ignition temperature for primary lithium batteries. Thus, the lithium batteries do not have to be in close proximity to the fire source in order to experience dangerous elevated temperatures during a cargo compartment fire. The current fire suppression system installed on board an aircraft needs a fire to be activated by a pilot. We note that the Halon system suppresses, but does not extinguish, a fire, thus allowing for the continuous generation of heat by a deep-seated fire. In addition, the temperature and heat flux data collected in the 64 cubic foot test facility cannot be compared to those collected in a full scale fire test like those described in the report "Minimum Performance Standards (MPS) for Aircraft Cargo Compartment Halon Replacement Fire Suppression Systems" (DOT/FAA/AR-TN03/6; a copy of which is in the public docket). For example, the ratio of flammable materials to compartment volume is much lower in the battery tests. To get comparable measurements, the battery tests would require a much larger quantity of primary lithium batteries, placed in a full scale cargo compartment along with other combustibles. Peak ceiling temperatures and temperature-time areas could then be compared meaningfully. Aircraft cargo compartments are as air tight as possible, which is necessary to contain the Halon fire suppression gas in the event of a cargo fire and to pressurize the cabin with available engine bleed air. In addition, cargo liners are designed to separate when exposed to a pressure of only 1 psi, in order to rapidly relieve pressure during a rapid cabin depressurization, and prevent the collapse of the cabin floor and possible loss of the aircraft. The pressure rise due to battery ignition is directly related to the size of the compartment. However, the data obtained during the FAA tests indicate that a significant pressure rise

can result from ignition of a small quantity of lithium batteries in the 10m³ facility and raises legitimate concerns about the rise possible with a full shipment of primary lithium batteries in a larger cargo compartment.

In its comments, PRBA refers to the NPRM published on May 6, 2004 by PHMSA under Docket HM-224B (69 FR 25469), which proposed a requirement for oxygen cylinders to be overpacked in a packaging that would allow the cylinder to withstand a temperature of 400° F for 3 hours. (On January 31, 2007 PHMSA published the HM-224B Final Rule (72 FR 4442).) PRBA questioned why the lithium batteries were subjected to higher temperature tests than the 400° F proposed for oxygen cylinders. Other commenters also question the validity of the tests cited in the IFR and our use of the test results as a basis for prohibiting the air transportation of primary lithium batteries and cells. For example, NEMA questions whether PHMSA has improperly relied on the FAA test report, which addresses a worst-case scenario for bulk shipments of lithium batteries, in limiting the transportation of single batteries or products packed with or contained in equipment. NEMA states that unlike "bulk shipments" of primary lithium batteries, batteries packed with or contained in equipment are not close in proximity to each other during transportation.

FedEx states that there appears to have been more problems with non-bulk shipments of primary lithium batteries as opposed to bulk shipments and that the FAA flammability test was conducted only on bulk shipments of primary lithium batteries. FedEx recommends that the FAA examine non-bulk shipments of primary lithium batteries and conduct appropriate tests on these types of primary lithium battery shipments.

Though the focus of the FAA Test Report was the shipment of primary lithium batteries in bulk, the tests performed by the FAA Tech Center provide more than sufficient justification to prohibit smaller shipments of primary lithium batteries. Several of the tests performed by the FAA Tech Center involved as few as four primary lithium batteries. In terms of the effectiveness of the halon suppressions system, the report states "the halon immediately extinguished the 1-propanol fire and reduced the overall temperature profile in the chamber but did nothing to impede the progress of the primary lithium battery fire once a single primary lithium battery had ignited." In terms of the pressure pulse, the report states:

One test was conducted with three Panasonic PL 123A batteries. The conditions were similar to the Sanyo CR2 and Duracell PL 123A battery tests. The pressure rise in the vessel was 1.2 psi (see Figure 17). These results are significant. The cargo compartment is only constructed to withstand a 1-psi pressure differential in order to rapidly equalize pressure in the event of a depressurization. Anything over 1 psi would activate the blowout panels, compromising the cargo compartment's integrity.

As these results indicate, the shipment of even a small number of primary lithium batteries presents a significant risk to a passenger aircraft. Therefore, it is appropriate to rely on the results from the FAA report to prohibit small shipments of primary lithium batteries.

ALPA expresses concern that primary lithium batteries may still be shipped by cargo only aircraft, including bulk primary lithium battery shipments that would continue to be excepted from many of the requirements of the HMR, including stringent packaging standards, quantity limits, and pilot notification. ALPA contends that the current HMR requirements for the shipment of primary lithium batteries by cargo aircraft are inappropriate for a commodity posing a great enough risk to warrant PHMSA's taking emergency action to prohibit the batteries aboard passenger aircraft. ALPA recommends the bulk shipment of primary lithium batteries should be governed by regulations consistent with those in place for commodities that pose a similar risk.

ALPA also suggests the risk associated with primary lithium batteries and cells is unique within the dangerous goods transportation system because an improperly packaged or damaged shipment of batteries can catch fire. ALPA states once a shipment of lithium batteries has been damaged, there is a significant likelihood that the batteries will self-initiate, ignite, and catch fire, overcoming the on-board fire suppression capabilities and likely causing the loss of the aircraft and all passengers and crew aboard. ALPA suggests bulk shipments of primary lithium batteries and cells should only be transported aboard cargo aircraft if they are subject to all of the applicable hazard communication requirements of the HMR and packaged to prevent damage, short circuiting, and in such a way that the batteries withstand the heat from an un-suppressed cargo fire.

The Teamsters state PHMSA failed to address the safety concerns of cargo-only aircraft transporting primary lithium batteries and cells. They state the hazardous properties of primary

lithium batteries do not depend on the mode of transportation or (in transportation by air) on the type of aircraft or transportation service. The Teamsters suggest that, until these hazards and the risk they pose can be mitigated by improved packaging standards, specific labeling/marketing requirements, strict quantity limitations, and appropriate hazard communication standards (including pilot notification), primary lithium batteries should not be transported aboard either passenger or cargo-only aircraft.

As stated in the IFR, PHMSA and FAA agree the greatest risk to public safety is in passenger carrying operations. For that reason, we did not extend the prohibition in the IFR to cargo-only aircraft. Therefore extending the prohibition to cargo operations is beyond the scope of this rulemaking.

c. *Marking and Labeling Requirements.* The IFR amended § 173.185 of the HMR to require cargo shipments of small and medium primary lithium batteries and cells, which are excepted from classification as Class 9 hazardous materials, to be marked "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT." This requirement applies to shipments of small and medium lithium batteries in all modes of transport.

McDowell Research, Ltd (McDowell) asks whether the IFR (and the proposed final rule) permit placement of the "Cargo Aircraft Only" label on packages of primary lithium batteries and cells that display the "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" markings. McDowell states there should be a similar, if not identical, statement on the shipping papers, or more specifically, the air waybill, for all air shipments of primary lithium batteries in this category to prevent such shipments from being inadvertently loaded aboard a passenger aircraft.

FedEx states that if the requirements in the IFR are adopted, PHMSA must require shippers to indicate whether the primary lithium battery shipment is nonrechargeable or rechargeable. FedEx states the proper shipping name for "Lithium batteries UN 3090" does not indicate whether the lithium batteries shipments are rechargeable or non-rechargeable. In addition, FedEx requests PHMSA require shippers to indicate whether the primary lithium battery is large or small. FedEx states that currently, the proper shipping names for "Lithium batteries contained in equipment, UN 3091" or "Lithium

batteries packed with equipment, UN 3091" do not indicate whether the lithium battery is large or small. FedEx expresses concern that a carrier has no reasonable way of knowing if the lithium battery is large or small. FedEx is also concerned with the proliferation of markings or other minimal requirements when dangerous goods shipments are otherwise not regulated and are excepted from the regulation. FedEx states marking a package "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" will only cause confusion, delay shipments and impede commerce. FedEx recommends the use of Cargo Aircraft Only labels for the shipment of lithium batteries subject to the final rule.

URS Corporation suggests PHMSA remove the marking requirement "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" for packages transported by highway, rail, and vessel with no air transportation involved. URS Corporation states the required markings are not sufficiently visible for transporters to divert packages of primary lithium batteries and cells to cargo aircraft only and that certain transporters that do not accept hazardous materials shipments may refuse to accept packages of equipment containing lithium batteries that are marked "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT." Another commenter states that without any identification requirements on the documents, it is quite possible that cargo may be transferred from an intended cargo flight to a passenger flight once the cargo is loaded into a unit load device (ULD). The commenter states that, because much, if not all, cargo within ULDs is no longer visible, the only means to identify prohibited primary lithium batteries is not available.

Under the HMR, an offeror of a hazardous material must provide the aircraft operator with a signed shipping paper containing the quantity and a basic shipping description of the material being offered for transportation (i.e., proper shipping name, hazard class, UN or NA identification number, and packing group); and certain emergency response information (See Part 172, Subparts C and G). Additional information may be required depending on the specific hazardous material being shipped (see § 172.203). Further, when a package containing a hazardous material is offered for transportation by air and the HMR prohibit its

transportation aboard passenger-carrying aircraft, the words "Cargo Aircraft Only" must be entered after the basic description (see § 172.203(f)). A copy of this shipping paper must accompany the shipment it covers during transportation aboard the aircraft (see § 175.35).

In addition to the shipping paper accompanying each hazardous materials shipment, an aircraft operator must provide the pilot-in-command of the aircraft written information about hazardous materials on board the plane (§ 175.33). For each hazardous materials shipment, this information must include: (1) Proper shipping name, hazard class, and identification number; (2) technical and chemical group name, if applicable; (3) any additional shipping description requirements applicable to specific types or shipments of hazardous materials or to materials shipped under ICAO requirements; (4) total number of packages; (5) net quantity or gross weight, as appropriate, for each package; (6) the location of each package on the aircraft; (7) for Class 7 (radioactive) materials, the number of packages, overpacks or freight containers, their transport index, and their location on the plane; and (8) an indication, if applicable, that a hazardous material is being transported under terms of an exemption. This information must be readily available to the pilot-in-command during flight. In essence, the notification of pilot-in-command (NOPC) provides the same information to emergency response personnel as a shipping paper for transportation by rail or public highway.

The HMR provides exceptions from the packaging and hazard communication requirements in the HMR for small and medium-size lithium batteries and cells (when transported by highway or rail). When the lithium content of the battery or cell does not exceed certain limits, the batteries and cells must be packaged in strong outer packagings and in a manner to protect against short circuit; however, such shipments are excepted from all other requirements in the HMR, including hazard communication requirements. Without hazardous communication markings on excepted packages, carriers will be unaware of the presence of primary lithium batteries and cells and may inadvertently transport primary lithium batteries and cells aboard passenger-carrying aircraft.

Applying the current hazard communication standards for an excepted shipment of lithium batteries would have the additional effect of regulating these batteries as a Class 9

material. The marking requirement adopted in the IFR informs properly trained carrier personnel of package transport restrictions for passenger aircraft, even if loaded in a ULD. We continue to believe it is necessary to require the marking for all modes of transport, not just aviation, because the required marking is likely to be the only visible indication that the package is forbidden for transportation by passenger aircraft. The multimodal requirement is necessary because many goods travel in different modes, and package restrictions must be identifiable in case a package is routed to aircraft transportation.

In its comments, FedEx suggests excepted packages of primary lithium batteries should also bear the "Cargo Aircraft Only" label so that these packages are more readily identifiable by air carrier employees. Although the HMR provides relief from the labeling requirements of Part 172, Subpart E, nothing precludes a shipper from voluntarily applying the "Cargo Aircraft Only" label, because it is not inconsistent with the nature of the shipment. However, the display of the "Cargo Aircraft Only" label by itself (without accompanying hazard class labels or a hazardous materials shipping paper) could cause confusion to accepting carriers of all transportation modes. Those who wish to voluntarily apply the "Cargo Aircraft Only" label on excepted packages of primary lithium batteries are encouraged to coordinate with all parties in their transportation chain.

NEMA states the labeling requirements for primary lithium batteries and cells impose unreasonable requirements for certain types of lithium battery shipments. For example, NEMA suggests marking of small packages containing one or a few batteries would be impossible with the mandated font size. In addition, marking of packages with multiple languages may lead to difficulty in meeting the mandated font size.

The marking provisions adopted in the IFR and this final rule require the outside of each package containing a primary lithium battery or cell to be marked "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" on a background of contrasting color, in letters: (i) At least 12 mm (0.5 inch) in height on packages having a gross weight of more than 30 kg (66 pounds); or (ii) At least 6 mm (0.25 inch) on packages having a gross weight of 30 kg (66 pounds) or less. In addition, § 172.304 requires markings to be durable; printed only in English;

printed on or affixed to the surface of the package; displayed on contrasting background; unobscured by labels or attachments; and located away from any other marking that could substantially reduce their effectiveness. Consistent with other marking requirements in the HMR, and in order to address the problems associated with marking smaller packages, we have revised the HMR to allow for a more appropriate font for smaller packages. In addition, to provide an alternative mark that is consistent with the adoption of the new shipping description in the international requirements, we are allowing packages to be marked "LITHIUM METAL BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT."

d. *Weight Restrictions for Primary Lithium Batteries.* In accordance with the IFR, primary lithium batteries or cells packed with or contained in equipment may be transported aboard passenger carrying aircraft under Special provisions A101 and A102. Special provision A101 and Special Provision A102 state the net weight of the package for a primary (non-rechargeable) lithium battery or cell contained in equipment may not exceed 5 kg (11 pounds).

NEMA recommends PHMSA either eliminate this restriction on products shipped with or contained with primary lithium batteries and cells or clarify the weight restrictions for primary lithium batteries and cells. NEMA also states PHMSA should expand the provision relating to products to cover lithium batteries shipped with accessories or other non-hazardous materials.

Intel Corporation (Intel) recommends PHMSA either rescind or significantly modify the IFR to make it inapplicable to shipments of small primary lithium batteries and cells contained in equipment. Based on its longstanding experience shipping products containing small primary lithium batteries, Intel contends no further restrictions on shipments of primary lithium batteries is warranted. In the alternative, Intel states any further restrictions on shipments of primary lithium batteries on passenger aircraft should include rational thresholds based on the weight of the batteries, not the weight of packages.

The IFR imposed a limited prohibition on offering for transportation and transportation of primary lithium batteries and cells as cargo aboard passenger-carrying aircraft and equipment containing or packed with large primary lithium batteries. We do not believe that any additional exceptions should be provided. We do

concur with those commenters who recommend the exception for primary lithium batteries contained in equipment and batteries packed with equipment should be the same. On September 28, 2006, we issued a correction to Docket HM-224E, 71 FR 56894. In the correction, we revised Special Provision A101 by changing the gross weight limitation to a net weight limitation. Because the requirements in A101 and A102 are now essentially the same, we are removing A102 and replacing references to A102 with A101. We are also clarifying that the net weight limitations in 188, A101, and A104 apply to the total net weight of the lithium batteries in the package.

e. Secondary Lithium Batteries. In the IFR, the existing package quantity limitation in § 173.185 of the HMR applicable to secondary lithium batteries or cells packed with or contained in equipment was relocated without change from column 9 of the Hazardous Materials Table (HMT) to Special Provisions A103 and A104. In accordance with Special Provision A103, an inner package of secondary lithium batteries or cells, packed with equipment is authorized aboard passenger carrying aircraft so long as the inner package does not exceed a gross weight of 5 kg (11 pounds). In addition, Special Provision A104 authorizes the transportation of a secondary lithium battery or cell contained in equipment aboard passenger carrying aircraft in packages not exceeding a net weight of 5 kg (11 pounds) of primary lithium batteries.

PRBA and other commenters suggest PHMSA separate the provisions in the HMR governing the transportation of primary lithium cells and batteries from those governing secondary lithium cells and batteries. To alleviate any confusion, PRBA suggests PHMSA incorporate into the HMR a new section specific to secondary lithium cells and batteries.

As noted earlier, the UN Recommendations have been recently revised by adding new shipping names for lithium metal and lithium-ion batteries. PHMSA will take these commenters' suggestions under consideration when it considers adding these new names into the HMR. We believe that it would be premature to adopt new requirements at this time.

f. Life-Saving Appliances. Section 173.219(a)(3), as amended by HM-215G (69 FR 76044), requires life-saving appliances containing lithium batteries to be transported in accordance with § 173.185 of the HMR. In accordance with Special Provision A101, a primary lithium battery or cell packed with or

contained in equipment is forbidden for transport aboard a passenger carrying aircraft unless: (1) The battery or cell conforms with the requirements and limitations of § 173.185(b)(1), (b)(2), (b)(3), (b)(4) and (b)(6) or § 173.185(c)(1), (c)(2), (c)(3) and (c)(5); (2) the package contains no more than the number of lithium batteries or cells necessary to power the intended piece of equipment; (3) the equipment and the battery or cell are packed in a strong packaging; and (4) the net weight of the batteries in the package does not exceed 5 kg (11 pounds). Packages conforming to the requirements of this Special Provision are excepted from all other requirements of the HMR.

DBC Marine Safety System Ltd. Requests clarification of the exception as it applies to life-saving equipment. Several commenters state the net effect of the IFR is to prohibit the carriage of life saving appliances on passenger aircraft; these commenters recommend a change to § 173.185 to include an exception for this type of device on passenger aircraft. Commenters state they know of no incidents or safety issues involving primary lithium batteries in life-saving appliances that warrant limitations on their transportation. Commenters state that life-saving equipment is carefully stowed, that the batteries are enclosed within the equipment, and, accordingly, that the risk of a mishap is very low.

It was our intent to provide life saving appliances the same exceptions that are provided in Special Provision A101 for equipment packed with or containing lithium batteries. Therefore, in order to clarify the applicability of the HMR for lifesaving appliances, in this final rule we have revised § 173.219 to allow life saving appliances containing lithium batteries to be transported in accordance with § 173.185 of the HMR, and Special Provisions 188, 189, and A101 as applicable.

III. Rulemaking Analysis 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.*) and 49 U.S.C. 44701, 49 U.S.C. 5103(b) authorizes the Secretary of Transportation to prescribe regulations for the safe transportation, including security, of hazardous material in intrastate, interstate, and foreign commerce. Title Section 44701 authorizes the Administrator of the Federal Aviation Administration to promote safe flight of civil aircraft in air

commerce by prescribing regulations and minimum standards for practices, methods, and procedures the Administrator finds necessary for safety in air commerce and national security. Under 49 U.S.C. 40113, the Secretary of Transportation has the same authority to regulate the transportation of hazardous materials by air, in carrying out § 44701, that he has under 49 U.S.C. 5103.

B. Executive Order 12866 and DOT Regulatory Policies and Procedures

This final rule is a significant regulatory action under section 3(f) of Executive Order 12866 and, therefore, was formally reviewed by the Office of Management and Budget. This final rule also is a significant rule under the Regulatory Policies and Procedures of the Department of Transportation (44 FR 11034). The following sections address the costs and benefits of the measures adopted in this final rule, but separately proposed in Dockets HM-224C and HM-224E.

Docket HM-224C

In conducting the regulatory analysis for Docket HM-224C, we focused on the risks posed by the transport of lithium batteries by aircraft. Because most shipments are transported by air, and many by passenger aircraft, the consequences of a fire caused by, or involving, a lithium batteries shipment could be severe. We determined a market failure exists (that is, the safety risks will not be controlled through economic decision-making) for two reasons: (1) Damages resulting from accidents involving the transportation of lithium batteries by air may be imposed on individuals, such as air crews and passengers, who are not parties to the transactions (externality); and (2) air carriers may have inadequate information to determine the risks and costs associated with accidents involving lithium batteries (inadequate or asymmetric information).

The costs associated with performing the required testing for small lithium batteries and the costs of complying with hazard communication and packaging rules for small and medium-size lithium batteries over the five-year analysis period (in current dollars) for all businesses impacted by the final rule is approximately \$26,000,000, or just over \$5 million discounted annually.

The benefits of the final rule are less readily quantified. At a minimum, the benefits include enhanced transportation safety, consistency between U.S. and international regulations, increased compliance, timely movement of goods, and consistent emergency response to

hazardous materials incidents. As part of a comprehensive program for promoting the safe movement of hazardous materials, we believe that these benefits exceed the marginal costs of the final rule. Moreover, when we consider the avoided cost of even a single lithium battery fire aboard an in-flight aircraft, the benefits of the final rule vastly exceed its costs. A copy of the complete regulatory evaluation is available for review in the public docket.

Docket HM-224E

The regulatory evaluation for Docket HM-224E reflects the same market failure analysis and considered costs and benefits over a ten-year analysis period. The findings of the benefit-cost analysis are shown in Table 5 of the regulatory evaluation. The cost elements identified include all those related to labeling (materials and labor), alternative transportation costs (delay costs and additional costs associated with shipping batteries and equipment only on cargo aircraft), training costs, and handling costs. These costs will be incurred by both primary lithium battery and equipment manufacturers and distributors. The final rule is expected to impose present-value costs on lithium battery manufacturers and manufacturers of equipment containing lithium batteries of \$12.5 million over 10 years.

The principal anticipated benefits associated with the lithium battery IFR are a reduction in incidents on passenger aircraft resulting from lithium battery fires. PHMSA estimated the number of potential passenger aircraft fires involving primary lithium batteries based on an analysis of incident occurrence in the DOT's Hazardous Materials Incident Reporting System. We anticipate present-value benefits over 10 years to total \$41 million, for a benefit-cost ratio of 3.3:1.

C. Executive Order 13132

The final rules have been analyzed in accordance with the principles and criteria prescribed in Executive Order 13132 ("Federalism"). This final rule preempts State, local and Indian tribe requirements but does not propose any regulation that has substantial 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.

Federal Hazardous Materials Transportation Law, 49 U.S.C. 5125 expressly preempts inconsistent State,

local, and Indian tribe requirements, including requirements on the following subjects:

- (1) The designation, description, and classification of hazardous materials;
- (2) The packing, repacking, handling, labeling, marking, and placarding of hazardous materials;
- (3) The preparation, execution, and use of shipping documents related to hazardous materials 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 materials; or
- (5) The design, manufacture, fabrication, marking maintenance, recondition, repair, or testing of a packaging or container represented, marked, certified, or sold as qualified for use in transporting hazardous material.

This final rule addresses subject items (1), (2) and (3) described above and, accordingly, State, local, and Indian tribe requirements on these subjects that do not meet the "substantively the same" standard will be preempted.

Federal hazardous materials transportation law provides at § 5125(b)(2) that, if DOT issues a regulation concerning any of the covered subjects, DOT 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. This effective date of preemption is 90 days after the publication of this 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 rule does not have tribal implications and does not impose substantial direct compliance costs, the funding and consultation requirements of Executive Order 13175 do not apply.

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

This final rule has been developed in accordance with Executive Order 13272 ("Proper Consideration of Small Entities in Agency Rulemaking") and DOT's procedures and policies to promote compliance with the Regulatory Flexibility Act (Pub. L. 96-354) and to ensure potential impacts of draft rules on small entities are properly

considered. The following sections address the small business impacts of the measures adopted in this final rule, but separately proposed in Dockets HM-224C and HM-224E.

Docket HM-224C

The Regulatory Flexibility Act of 1980 requires agencies to evaluate the potential effects of their proposed and final rules on small businesses, small organizations and small governmental jurisdictions. Section 603 of the Act requires agencies to prepare and make available for public comment a final regulatory flexibility analysis (FRFA) describing the impact of final rules on small entities. Section 603 (b) of the Act specifies the content of a FRFA. Each FRFA must contain:

1. A succinct statement of the need for, and objectives of, the rule.
2. A summary of the significant issues raised by the public comments in response to the IRFA, a summary of the assessment of the agency issues, and a statement of any changes made in the proposed rule as a result of such comments.
3. A description and an estimate of the number of small entities to which the rule will apply or an explanation of why no such estimate is available.
4. A description of the projected reporting, recordkeeping, and other compliance requirements of the rule, including an estimate of the classes of small entities that will be subject to the requirement and the types of professional skills necessary for preparation of the report or record.
5. A description of the steps the agency has taken to minimize the significant adverse economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each of the other significant alternatives to the rule considered by the agency was rejected.

AN FRFA describing the impact of this final rule on small entities is available for review in the public docket. The FRFA projects the total cost over the five-year analysis period (in current dollars) for all small businesses impacted by this rule is \$28,463,004. On an annual basis, this is \$5,292,601, equating to an average annual cost per lithium battery manufacturer or distributor of \$71,285 and an average annual cost to small electronics companies of \$2,121. Costs are associated with new testing requirements for certain currently excepted batteries and new hazard communication and packaging

requirements. Considering the danger of a fire aboard an aircraft, the benefits of this rule could likely be in the hundreds of millions of dollars. At a minimum, the benefits of this rulemaking include enhanced transportation safety, consistency between U.S. and international regulations, increased compliance, timely movement of goods, and consistent emergency response to hazardous materials incidents. Summarized below is a brief discussion on each element of the FRFA prepared for this final rule.

Need for the final rule. Since 1999, there have been several incidents involving lithium batteries in air transportation. At least four of those incidents involved lithium battery fires; one incident required medical treatment for two workers. All of these incidents resulted in fires that were discovered either just before or just after transportation aboard aircraft. To address this problem, the United Nations Committee of Experts revised the UN Recommendations on the Transport of Dangerous Goods (UN Recommendations) to require new packaging and hazard communication measures for shipments of lithium batteries and cells. The International Civil Aviation Organization's Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO Technical Instructions) and International Maritime Dangerous Goods Code (IMDG Code) were revised to reflect these changes.

Requiring lithium battery designs to be tested in accordance with the UN Test Manual is the internationally accepted method to ensure that lithium cells and batteries are sufficiently robust to withstand normal conditions of transport. However, the HMR currently provide an exception for testing small lithium batteries. In addition, the HMR provide significant exceptions from packaging and hazard communication requirements for small- and medium-size batteries. (A battery's size is determined by its lithium content.) The incidents referenced above suggest the HMR exceptions for small- and medium-size lithium batteries do not adequately protect against fire risks resulting from short circuits or damage to the batteries. Due to these exceptions, the current requirements do not provide for accurate communication of the hazards associated with lithium batteries.

Summary of comments to the IRFA. FEDCO Electronics, Inc., and PRBA express concern over the IRFA estimate of potential costs to test currently excepted lithium batteries. SkyBitz, FEDCO, and SION Power contend the

testing cost per design ranges from \$20,000 to \$134,000 and the testing for a complete line of batteries would cost between \$500,000 and \$750,000 for primary lithium batteries and substantially more for rechargeable batteries. Our analysis indicates the costs of the new lithium battery tests are much lower. To obtain information on testing costs, we contacted an independent laboratory currently performing tests on lithium batteries in accordance with the revisions to the UN Test Manual being adopted in this final rule. The laboratory indicated, for a company with multiple battery designs to be tested, the total testing cost per design would be \$6,000. It is our understanding the \$6,000 cost per design covers all of the separate test components in the revisions to the UN Test Manual, including temperature, altitude, vibration, shock, impact, overcharge, forced discharge, and intentional short.

PRBA, FEDCO, SION, Valence Technology, ACR, SkyBitz Inc., EIA, and Intel Corporation request several exceptions to the testing requirements for small lithium batteries. They ask us to include an exception for single cell lithium batteries, an exception for small production runs, and a delay in the effective date of the rule. Based on these comments, we estimate an exception for single-cell lithium batteries would reduce the testing costs imposed on small lithium battery businesses under this rule by an average of \$10,321.61 annually over the 5-year analysis time horizon. An exception tied to small production runs would reduce the estimated costs to small businesses by an average of \$17,029 annually over the 5-year analysis time horizon. The IRFA envisioned a two-year implementation period. Allowing industry an additional two years to implement the rule would not reduce the nominal costs incurred by industry, but, due to the discounting of the cost stream, would reduce the present value costs to the average small business by an average of \$1,576 annually. In response to the comments, in this final rule, we are adopting exceptions for small lithium batteries and for small production runs of lithium batteries. We are also adopting a two-year implementation period.

PRBA, ACR, SkyBitz, and SION Power ask PHMSA to retain the current HMR exception for medium-size batteries. We determined that retaining the exception would result in the elimination of 80% of shipping costs relating to the Class 9 hazardous material shipping requirements and would reduce shipping costs to small businesses affected by the proposed rule

by roughly \$1.3 million in real dollars annually during the five-year analysis timeframe. We elected to retain the exception for the transportation of medium-size lithium batteries transported by ground. The retention of this exception for ground transport reduces the cumulative cost of the final rule for small businesses by \$68,882 per year.

FEDCO and ACR indicate the number of small businesses identified by the IRFA (60 small businesses) should be much higher. In the FRFA we identify 2,239 small businesses potentially affected by this rule. We used a number of resources, including industry association rosters, online databases, and targeted searches to identify these small businesses. Further searches in Dun & Bradstreet data were used, where appropriate, to confirm the categorization of each entity according to Small Business Administration (SBA) size standards. The FRFA includes the original 60 small businesses as lithium battery and cell manufacturers and 2,179 businesses that either manufacture or distribute electronic equipment requiring lithium batteries. Eighty percent of small electronics businesses (1,743) are not subject to the training costs because they already have employees with required HMR or ICAO training or can ship their products by ground. The remaining 20% of small electronics businesses (436) will be affected by the training costs applicable to Class 9 shipping requirements for medium-size batteries.

PRBA, ACR, SkyBitz, FEDCO, and SION Power indicate the incremental costs associated with hazardous material shipping requirements would average \$0.05 per small cell or battery, while the incremental costs tied to medium-size and large batteries and cells would equal \$0.31 per battery and \$0.26 per cell. According to the commenters, these costs include all packaging and shipping costs tied to the proposed rule, with packaging costs, hazardous material surcharges, and other costs spread over the number of units shipped. In addition, commenters indicate the IRFA references a FedEx Express hazmat surcharge of \$30 in the testing costs, but it appears PHMSA did not factor that cost into the routine shipping costs. In the FRFA shipping cost estimates are determined on a per-cell or per-battery basis and include all components, including hazmat surcharges. The FRFA includes all costs listed above.

PRBA and FEDCO indicate the training costs used in the IRFA underestimate the true cost of training. In addition, commenters assert we failed

to include all companies subject to training, such as those companies who incorporate lithium batteries into their products, and those who distribute these products. The training cost analysis considers various scenarios provided by small businesses, including secondary manufacturers and distributors, impacted by the proposed rule. One scenario considered the case when an external trainer was brought on-site and delivered the training course for a fee to employees. Another scenario considered the case where an employee traveled to take a "train-the-trainer" course, and returned to deliver the training to on-site employees. A third scenario considered in this study is based on training cost data provided by a single employer that did not share the specifics of its training program. Each cost scenario was impacted by the number of employees requiring training. Companies training a large number of employees typically incurred smaller training costs per employee due to their ability to spread the fixed costs of the "train-the-trainer" course or the external trainer visit across a larger number of employees. Based on input from small businesses impacted by the proposed rule, these assumptions appear reasonable, generating a training cost estimate of \$828,138 over the 5-year time horizon.

Number of small entities to which the rule will apply. The FRFA projects the changes being adopted by this final rule will affect 60 lithium battery and cell businesses (manufacturers and distributors) and 2,179 small electronics businesses. The number of small businesses affected was based on the size standards developed by the Small Business Administration and codified in 13 CFR 121.201.

Reporting, recordkeeping, and other compliance requirements of the rule. The compliance costs to small businesses subject to this final rule are primarily related to testing battery and cell designs, shipping of both prototypes and final products, and the training required for employees newly classified as hazmat employees. Each of these is discussed separately in the FRFA. Additionally, the FRFA discusses costs for lithium battery and cell businesses and electronics businesses separately. It also discusses the extent to which these additional compliance costs can be passed through the small businesses to their customers.

Steps to minimize the economic impact on small entities. The final rule is designed to increase safety for transportation of lithium batteries and cells. Any alternatives to the final rule should result in similar safety benefits

to warrant consideration. We considered the following possible alternatives:

1. Except lithium batteries and cells transported by motor vehicle for the purposes of recycling from Class 9 hazmat requirements.
2. Provide manufacturers with four years, rather than two, to comply with the new testing requirements for existing small lithium battery designs.
3. Adopt a small production run exception.
4. Retain the current exemption from the shipping requirements for medium-size lithium-ion batteries.
5. Increase the lower threshold for medium-size lithium-ion batteries and cells.
6. Except small, single-cell lithium batteries from testing requirements if the cells have already passed the UN T1-T8 tests.
7. Require that small lithium batteries be shipped as Class 9 hazmat but not require testing unless they are being shipped internationally by air.
8. Retain the current exception for medium-size lithium batteries and cells shipped in or with equipment from the Class 9 shipping requirements for all modes.

Out of the eight alternatives listed above, we rejected all but numbers 1, 3, 4, and 6. Our reasons for rejecting four of the eight alternatives hinge on safety concerns and the benefits of harmonization. The adoption of alternatives 1, 3, 4, and 6 will have little to no impact on safety and will provide a cumulative cost savings to the affected small businesses of only \$100,000 per year.

Docket HM-224E

The small business impact analysis conducted for Docket HM-224E was included in the regulatory evaluation prepared for the Final Rule and is summarized below. A complete copy of the report is in the public docket for this rulemaking.

Businesses likely to be affected by the final rule in Docket HM-224E are primary lithium battery manufacturers and distributors. For purposes of the small business impact analysis, the definition of "small business" has the same meaning as under the Small Business Act.

Based on the analysis in the regulatory evaluation, we estimate that the 60 small businesses will incur the following per package costs to comply with the this final rule: (1) \$.20 for labels (including label and associated labor costs); (2) \$.60 for alternative transportation costs (\$.32/pound \times .25 \times 10 pounds); (3) \$.60 for costs associated with transportation delays; and (4) \$.90

for handling and customer service costs). Thus, the total per package cost to a small business to comply with this final rule is estimated to be \$2.50.

We believe that overall cost of the rule for small businesses is substantially less than \$2.50 per shipment. It is our understanding many of the small businesses included in the study used cargo aircraft operators, not passenger aircraft cargo service, prior to implementation of the prohibition. To the extent that these small businesses were not shipping via passenger cargo service, the estimated \$2.50 per package cost impact would only be imposed on a fraction of shipments offered for transportation by the small businesses affected by the final rule.

Based on the above analysis, the PHMSA Administrator certifies that the amendments adopted under Docket HM-224E will not have a significant economic impact on a substantial number of small entities.

F. Unfunded Mandates Reform Act of 1995

This final rule does not impose any mandate on a State, local, or Native American tribal government and, accordingly, does not impose unfunded mandates under the Unfunded Mandates Reform Act of 1995. The final rule does not result in costs of \$120.7 million or more, in the aggregate, to any of the following: State, local, or Native American tribal governments, or the private sector.

G. Paperwork Reduction Act

PHMSA currently has an approved information collection under OMB Control Number 2137-0034, ("Hazardous Materials Shipping Papers and Emergency Response Information" with an expiration date of May 31, 2008. This final rule resulted in a minimal increase in annual burden and costs based on a new information collection requirement regarding the shipment of lithium batteries.

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. This notice identifies a new information collection request that OMB approved based on the requirements in the rule. PHMSA developed burden estimates to reflect changes in this rule. PHMSA estimates the new total information collection and recordkeeping burden resulting from the rule are as follows:

Hazardous Materials Shipping Papers & Emergency Response Information: OMB Control No. 2137-0034:

Total Annual Number of Respondents: 250,000.
Total Annual Responses: 260,000,000.
Total Annual Burden Hours: 6,500,834.
Total Annual Burden Cost: \$6,510,000.

Requests for a copy of this information collection should be directed to Deborah Boothe or T. Glenn Foster, Office of Hazardous Materials Standards (PHH-11), Pipeline and Hazardous Materials Safety Administration, Room 8430, 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. Under the Paperwork Reduction Act of 1995, no person is required to respond to an information collection unless it displays a valid OMB control number.

H. 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 any action significantly affecting the quality of the human environment. There are no significant environmental impacts associated with this final rule.

I. Regulation Identifier Number

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 may be used to cross-reference this action with the Unified Agenda.

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 at <http://dms.dot.gov>.

List of Subjects

49 CFR Part 171

Exports, Hazardous materials transportation, Hazardous waste, Imports, Incorporation by reference,

Reporting and recordkeeping requirements.

49 CFR Part 172

Education, Hazardous materials transportation, Hazardous waste, Labeling, Markings, Packaging and containers, Reporting and recordkeeping requirements.

49 CFR Part 173

Hazardous materials transportation, Packaging and containers, Radioactive materials, Reporting and Recordkeeping requirements, Uranium.

49 CFR Part 175

Air carriers, Hazardous materials transportation, Radioactive materials, Reporting and recordkeeping requirements.

Accordingly, the interim final rule amending 49 CFR parts 171, 172, 173, and 175 that was published at 69 FR 75207 on December 15, 2004, is adopted as a final rule with the following changes and in consideration of the foregoing, 49 CFR Chapter I is amended as follows:

PART 171—GENERAL INFORMATION, REGULATIONS, AND DEFINITIONS

1. The authority citation for part 171 continues to read as follows:

Authority: 49 U.S.C. 5101-5128, 44701; 49 1.45 and CFR 1.53; Pub L. 101-410 section 4 (28 U.S.C. 2461); Pub. L. 104-134, section 31001.

2. In § 171.8, definitions for "Aggregate lithium content", "Equivalent lithium content", and "Lithium content" are added in appropriate alphabetical order to read as follows:

§ 171.8 Definitions and abbreviations.

Aggregate lithium content means the sum of the grams of lithium content or equivalent lithium content contained by the cells comprising a battery.

Equivalent lithium content means, for a lithium-ion cell, the product of the rated capacity, in ampere-hours, of a lithium-ion cell times 0.3, with the result expressed in grams. The equivalent lithium content of a battery equals the sum of the grams of equivalent lithium content contained in the component cells of the battery.

Lithium content means the mass of lithium in the anode of a lithium metal or lithium alloy cell. The lithium content of a battery equals the sum of the grams of lithium content contained in the component cells of the battery.

For a lithium-ion cell see the definition for "equivalent lithium content".

* * * * *

3. In § 171.12, paragraph (a)(6) is added to read as follows:

§ 171.12 North American Shipments.

(a) * * *

(6) *Primary lithium batteries and cells.* Packages containing primary lithium batteries and cells that meet the exception in § 172.102, Special Provision 188 or 189 of this subchapter must be marked "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" or "LITHIUM METAL BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT." The provisions of this paragraph do not apply to packages that contain 5 kg (11 pounds) net weight or less of primary lithium batteries cells that are contained in or packed with equipment.

* * * * *

4. In § 171.24, paragraph (d)(1)(ii) is revised to read as follows:

§ 171.24 Additional requirements for the use of the ICAO Technical Instructions.

* * * * *

(d) * * *

(1) * * *

(ii) *Primary lithium batteries and cells.* Primary lithium batteries and cells are forbidden for transportation aboard passenger-carrying aircraft. Equipment containing or packed with primary lithium batteries or cells are forbidden for transport aboard passenger-carrying aircraft except as provided in § 172.102, Special Provision A101 of this subchapter. When transported aboard cargo-only aircraft, packages containing primary lithium batteries and cells transported in accordance with Special Provision A45 of the ICAO Technical Instructions must be marked "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" or "LITHIUM METAL BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT." This marking is not required on packages that contain 5 kg (11 pounds) net weight or less of primary lithium batteries or cells that are contained in or packed with equipment.

* * * * *

5. In § 171.25, paragraph (b)(3) is added to read as follows:

§ 171.25 Additional requirements for the use of the IMDG Code.

* * * * *

(b) * * *

(3) Packages containing primary lithium batteries and cells that are transported in accordance with Special Provision 188 of the IMDG Code must be marked "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" or "LITHIUM METAL BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT." This marking is not required on packages that contain 5 kg (11 pounds) net weight or less of primary lithium batteries and cells that are contained in or packed with equipment.

* * * * *

PART 172—HAZARDOUS MATERIALS TABLE, SPECIAL PROVISIONS, HAZARDOUS MATERIALS COMMUNICATIONS, EMERGENCY RESPONSE INFORMATION, AND TRAINING REQUIREMENTS

■ 6. The authority citation for part 172 is revised to read as follows:

Authority: 49 U.S.C. 5101–5128, 44701; 49 CFR 1.53.

§ 172.101 [Amended]

■ 7. In § 172.101, in the Hazardous Materials Table, the following changes are made:

■ a. For the entry "Lithium batteries, contained in equipment", Column (7), Special Provisions, is revised to read "29, 188, 189, 190, A54, A55, A101, A104" and Column (9A) is revised to read "See A101, A104."

■ b. For the entry "Lithium batteries packed with equipment", Column (7), Special Provisions, is revised to read "29, 188, 189, 190, A54, A55, A101, A103" and Column (9A) is revised to read "See A101, A103."

■ c. For the entry "Lithium battery", Column 7, Special Provisions, is revised to read "29, 188, 189, 190, A54, A55, A100."

■ 8. In § 172.102, in paragraph (c)(1), in Special Provisions 134 and 157, the phrase "A102" is amended to read "A101". Special Provision 29 is revised, Special Provisions 188, 189, 190 are added, in paragraph (c)(2) Special Provision A102 is removed and Special Provisions A101, A103, and A104 are revised to read as follows:

§ 172.102 Special provisions.

* * * * *

(c) * * *

(1) * * *

29 For transportation by motor vehicle, rail car or vessel, production runs (exceptions for prototypes can be found in § 173.185(e)) of not more than 100 lithium cells or batteries are exempted from the testing requirements of § 173.185(a)(1) if—

a. For a lithium metal cell or battery, the lithium content is not more than 1.0 g per cell and the aggregate lithium content is not more than 2.0 g per battery, and, for a lithium-ion cell or battery, the equivalent lithium content is not more than 1.5 g per cell and the aggregate equivalent lithium content is not more than 8 g per battery;

b. The cells and batteries are transported in an outer packaging that is a metal, plastic or plywood drum or metal, plastic or wooden box that meets the criteria for Packing Group I packagings; and

c. Each cell and battery is individually packed in an inner packaging inside an outer packaging and is surrounded by cushioning material that is non-combustible, and non-conductive.

* * * * *

188 *Small lithium cells and batteries.* Lithium cells or batteries, including cells or batteries packed with or contained in equipment, are not subject to any other requirements of this subchapter if they meet all of the following:

a. *Primary lithium batteries and cells.* (1)

Primary lithium batteries and cells are forbidden for transport aboard passenger-carrying aircraft. The outside of each package that contains primary (nonrechargeable) lithium batteries or cells must be marked "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" or "LITHIUM METAL BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" on a background of contrasting color. The letters in the marking must be:

(i) At least 12 mm (0.5 inch) in height on packages having a gross weight of more than 30 kg (66 pounds); or

(ii) At least 6 mm (0.25 inch) on packages having a gross weight of 30 kg (66 pounds) or less, except that smaller font may be used as necessary to fit package dimensions; and

(2) The provisions of paragraph (a)(1) do not apply to packages that contain 5 kg (11 pounds) net weight or less of primary lithium batteries or cells that are contained in or packed with equipment and the package contains no more than the number of lithium batteries or cells necessary to power the piece of equipment;

b. For a lithium metal or lithium alloy cell, the lithium content is not more than 1.0 g. For a lithium-ion cell, the equivalent lithium content is not more than 1.5 g;

c. For a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2.0 g. For a lithium-ion battery, the aggregate equivalent lithium content is not more than 8 g;

d. Effective October 1, 2008, the cell or battery must be of a type proven to meet the requirements of each test in the UN Manual of Tests and Criteria (IBR; see § 171.7 of this subchapter);

e. Cells or batteries are separated so as to prevent short circuits and are packed in a strong outer packaging or are contained in equipment;

f. Effective October 1, 2008, except when contained in equipment, each package containing more than 24 lithium cells or 12 lithium batteries must be:

(1) Marked to indicate that it contains lithium batteries, and special procedures

should be followed in the event that the package is damaged;

(2) Accompanied by a document indicating that the package contains lithium batteries and special procedures should be followed in the event that the package is damaged;

(3) Capable of withstanding a 1.2 meter drop test in any orientation without damage to cells or batteries contained in the package, without shifting of the contents that would allow short circuiting and without release of package contents; and

(4) Gross weight of the package may not exceed 30 kg (66 pounds). This requirement does not apply to lithium cells or batteries packed with equipment;

g. Electrical devices must conform to § 173.21 of this subchapter; and

h. Lithium batteries or cells are not authorized aboard an aircraft in checked or carry-on luggage except as provided in § 175.10.

189 *Medium lithium cells and batteries.* Effective October 1, 2008, when transported by motor vehicle or rail car, lithium cells or batteries, including cells or batteries packed with or contained in equipment, are not subject to any other requirements of this subchapter if they meet all of the following:

a. The lithium content anode of each cell, when fully charged, is not more than 5 grams.

b. The aggregate lithium content of the anode of each battery, when fully charged, is not more than 25 grams.

c. The cells or batteries are of a type proven to meet the requirements of each test in the UN Manual of Tests and Criteria (IBR; see § 171.7 of this subchapter). A cell or battery and equipment containing a cell or battery that was first transported prior to January 1, 2006 and is of a type proven to meet the criteria of Class 9 by testing in accordance with the tests in the UN Manual of Tests and Criteria, Third Revised Edition, 1999, need not be retested.

d. Cells or batteries are separated so as to prevent short circuits and are packed in a strong outer packaging or are contained in equipment.

e. The outside of each package must be marked "LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD AIRCRAFT AND VESSEL" on a background of contrasting color, in letters:

(1) At least 12 mm (0.5 inch) in height on packages having a gross weight of more than 30 kg (66 pounds); or

(2) At least 6 mm (0.25 inch) on packages having a gross weight of 30 kg (66 pounds) or less, except that smaller font may be used as necessary to fit package dimensions.

f. Except when contained in equipment, each package containing more than 24 lithium cells or 12 lithium batteries must be:

(1) Marked to indicate that it contains lithium batteries, and that special procedures should be followed in the event that the package is damaged;

(2) Accompanied by a document indicating that the package contains lithium batteries and that special procedures should be followed in the event that the package is damaged;

(3) Capable of withstanding a 1.2 meter drop test in any orientation without damage

to cells or batteries contained in the package, without shifting of the contents that would allow short circuiting and without release of package contents; and

(4) Gross weight of the package may not exceed 30 kg (66 pounds). This requirement does not apply to lithium cells or batteries packed with equipment.

g. Electrical devices must conform to § 173.21 of this subchapter.

190. Until the effective date of the standards set forth in Special Provision 189, medium lithium cells or batteries, including cells or batteries packed with or contained in equipment, are not subject to any other requirements of this subchapter if they meet all of the following:

a. *Primary lithium batteries and cells.* (1) Primary lithium batteries and cells are forbidden for transport aboard passenger-carrying aircraft. The outside of each package that contains primary (nonrechargeable) lithium batteries or cells must be marked "PRIMARY LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT" ABOARD PASSENGER AIRCRAFT" or "LITHIUM METAL BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" on a background of contrasting color. The letters in the marking must be:

(i) At least 12 mm (0.5 inch) in height on packages having a gross weight of more than 30 kg (66 pounds); or

(ii) At least 6 mm (0.25 inch) on packages having a gross weight of 30 kg (66 pounds) or less, except that smaller font may be used as necessary to fit package dimensions; and

(2) The provisions of paragraph (a)(1) do not apply to packages that contain 5 kg (11 pounds) net weight or less of primary lithium batteries or cells that are contained in or packed with equipment and the package contains no more than the number of lithium batteries or cells necessary to power the piece of equipment.

b. The lithium content of each cell, when fully charged, is not more than 5 grams.

c. The aggregate lithium content of each battery, when fully charged, is not more than 25 grams.

d. The cells or batteries are of a type proven to meet the requirements of each test in the UN Manual of Tests and Criteria (IBR; see § 171.7 of this subchapter). A cell or battery and equipment containing a cell or battery that was first transported prior to January 1, 2006 and is of a type proven to meet the criteria of Class 9 by testing in accordance with the tests in the UN Manual of Tests and Criteria, Third Revised Edition, 1999, need not be retested.

e. Cells or batteries are separated so as to prevent short circuits and are packed in a strong outer packaging or are contained in equipment.

f. Electrical devices must conform to § 173.21 of this subchapter.

* * * * *

Code/Special Provisions

* * * * *

(2) * * *

* * * * *

A101 A primary lithium battery or cell packed with or contained in equipment is forbidden for transport aboard a passenger

carrying aircraft unless the equipment and the battery conform to the following provisions and the package contains no more than the number of lithium batteries or cells necessary to power the intended piece of equipment:

(1) The lithium content of each cell, when fully charged, is not more than 5 grams.

(2) The aggregate lithium content of the anode of each battery, when fully charged, is not more than 25 grams.

(3) The net weight of lithium batteries does not exceed 5 kg (11 pounds).

A103 Equipment is authorized aboard passenger carrying aircraft if the gross weight of the inner package of secondary lithium batteries or cells packed with the equipment does not exceed 5 kg (11 pounds).

A104 The net weight of secondary lithium batteries or cells contained in equipment may not exceed 5 kg (11 pounds) in packages that are authorized aboard passenger carrying aircraft.

* * * * *

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

9. 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.

10. Section 173.185 is revised to read as follows:

§ 173.185 Lithium cells and batteries.

(a) *Cells and batteries.* A lithium cell or battery, including a lithium polymer cell or battery and a lithium-ion cell or battery, must conform to all of the following requirements:

(1) Be of a type proven to meet the requirements of each test in the UN Manual of Tests and Criteria (IBR; see § 171.7 of this subchapter). A cell or battery and equipment containing a cell or battery that was first transported prior to January 1, 2006 and is of a type proven to meet the criteria of Class 9 by testing in accordance with the tests in the UN Manual of Tests and Criteria, Third Revised Edition, 1999, need not be retested.

(2) Incorporate a safety venting device or otherwise be designed in a manner that will preclude a violent rupture under conditions normally incident to transportation.

(3) Be equipped with an effective means to prevent dangerous reverse current flow (e.g., diodes, fuses, etc.) if a battery contains cells or series of cells that are connected in parallel.

(4) Be packaged in combination packagings conforming to the requirements of part 178, subparts L and M, of this subchapter at the Packing Group II performance level. The lithium battery or cell must be packed in inner packagings in such a manner as to

prevent short circuits, including movement which could lead to short circuits. The inner packaging must be packed within one of the following outer packagings: metal boxes (4A or 4B); wooden boxes (4C1, 4C2, 4D, or 4F); fiberboard boxes (4G); solid plastic boxes (4H2); fiber drums (1G); metal drums (1A2 or 1B2); plywood drums (1D); plastic jerricans (3H2); or metal jerricans (3A2 or 3B2).

(5) Be equipped with an effective means of preventing external short circuits.

(6) Except as provided in paragraph (d) of this section, cells and batteries with a liquid cathode containing sulfur dioxide, sulfuryl chloride or thionyl chloride may not be offered for transportation or transported if any cell has been discharged to the extent that the open circuit voltage is less than two volts or is less than 2/3 of the voltage of the fully charged cell, whichever is less.

(b) *Lithium cells or batteries packed with equipment.* Lithium cells or batteries packed with equipment may be transported as Class 9 materials if the batteries and cells meet all the requirements of paragraph (a) of this section. The equipment and the packages of cells or batteries must be further packed in a strong outer packaging. The cells or batteries must be packed in such a manner as to prevent short circuits, including movement that could lead to short circuits.

(c) *Lithium cells or batteries contained in equipment.* Lithium cells or batteries contained in equipment may be transported as Class 9 materials if the cells and batteries meet all the requirements of paragraph (a) of this section, except paragraph (a)(4) of this section, and the equipment is packed in a strong outer packaging that is waterproof or is made waterproof through the use of a liner unless the equipment is made waterproof by nature of its construction. The equipment and cells or batteries must be secured within the outer packaging and be packed so as to prevent movement, short circuits, and accidental operation during transport.

(d) *Cells and batteries; for disposal or recycling.* A lithium cell or battery offered for transportation or transported by motor vehicle to a permitted storage facility, disposal site or for purposes of recycling is excepted from the specification packaging requirements of paragraph (a)(4) of this section and the requirements of paragraphs (a)(1) and (a)(6) of this section when protected against short circuits and packed in a strong outer packaging conforming to the requirements of §§ 173.24 and 173.24a.

(e) *Shipments for testing (prototypes).* A lithium cell or battery is excepted from the requirements of (a)(1) of this section when transported by motor vehicle for purposes of testing. The cell or battery must be individually packed in an inner packaging, surrounded by cushioning material that is non-combustible and nonconductive. The cell or battery must be transported as a Class 9 material.

(f) A lithium cell or battery that does not comply with the provisions of this subchapter may be transported only under conditions approved by the Associate Administrator.

(g) Batteries employing a strong, impact-resistant outer casing and exceeding a gross weight of 12 kg (26.5 lbs.), and assemblies of such batteries, may be packed in strong outer packagings, in protective enclosures (for example, in fully enclosed wooden slatted crates) or on pallets. Batteries must be secured to prevent inadvertent movement, and the terminals may not support the weight of other superimposed elements. Batteries packaged in this manner are not permitted for transportation by passenger aircraft, and may be transported by cargo aircraft only if approved by the Associate Administrator prior to transportation.

■ 11. In § 173.219, paragraph (b)(3) is revised to read as follows:

§ 173.219 Life-saving appliances.
* * * * *

(b) * * *
(3) Electric storage batteries and lithium batteries (Life saving appliances containing lithium batteries must be transported in accordance with § 173.185, and Special Provisions 188, 189, A101, A103 and A104 as applicable.);
* * * * *

§ 173.220 [Amended]

■ 12. In § 173.220, in paragraph (d), the phrase "Special Provision A102" is amended to read "Special Provision A101".

PART 175—CARRIAGE BY AIRCRAFT

■ 13. The authority citation for part 175 continues to read as follows:

Authority: 49 U.S.C. 5101–5128; 44701; 49 CFR 1.53.

■ 14. In § 175.10, paragraph (a)(17) is revised to read as follows:

§ 175.10 Exceptions.

(a) * * *
(17) Except as provided in § 173.21 of this subchapter, consumer electronic and medical devices (watches, calculating machines, cameras, cellular

phones, lap-top and notebook computers, camcorders, etc.) containing lithium cells or batteries and spare lithium batteries and cells for these devices, when carried by passengers or crew members for personal use. Each spare battery must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g., by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch) and carried in carry-on baggage only. In addition, each installed or spare battery must not exceed the following:

(i) For a lithium metal battery, a lithium content of not more than 2 grams per battery; or

(ii) For a lithium-ion battery, an aggregate equivalent lithium content of not more than 8 grams per battery, except that up to two batteries with an aggregate equivalent lithium content of more than 8 grams but not more than 25 grams may be carried.
* * * * *

Issued in Washington, DC, on July 31, 2007, under authority delegated in 49 CFR Part 1.

Thomas J. Barrett,
Administrator.
{FR Doc. E7–15213 Filed 8–8–07; 8:45 am}
BILLING CODE 4910–60–P

Appendix B



U.S. Department
of Transportation
**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Ave., S E
Washington, DC 20590

JAN 22 2008

The Honorable Mark V. Rosenker
Chairman
National Transportation Safety Board
490 L'Enfant Plaza, SW
Washington, DC 20594

Dear Chairman Rosenker:

Thank you for your June 27, 2007 letter concerning Safety Recommendations I-07-1 and I-07-02. The recommendations were issued following the National Transportation Safety Board's (NTSB) investigation of a motor coach incident on September 23, 2005, near Wilmer, Texas. The incident involved a motor coach carrying 44 assisted living facility residents and nursing staff. In the incident, the right rear tire hub overheated and caught fire; heavy smoke and fire quickly engulfed the vehicle. The intensity of the fire was increased by the release of medical oxygen from cylinders inside the passenger cabin and luggage compartment of the motor coach. The recommendations state:

I-07-1

Develop standards for the safe transportation of partially pressurized aluminum cylinders by, for example, requiring the addition of temperature-actuated pressure relief devices or the reduction of residual pressure to safe limits, to ensure that such cylinders do not experience overpressure failure when exposed to a fire.

I-07-2

Issue guidance to, at a minimum, the Fraternal Order of Police, International Association of Chiefs of Police, International Association of Fire Chiefs, International Association of Fire Fighters, National Association of State EMS Officials, National Sheriff's Association, and National Volunteer Fire Council, describing the risk of overpressure failure of partially pressurized aluminum cylinders and the steps that should be taken to protect responders and the general public from a vehicle fire when aluminum cylinders are present.

The Pipeline and Hazardous Materials Safety Administration (PHMSA) was pleased to support NTSB's investigation of the Wilmer, Texas accident, particularly with the metallurgical evaluation of the aluminum oxygen cylinders. As you know, we have extensive expertise in this area. Our examination of the cylinders showed that the oxygen contained in the cylinders was released both through the proper operation of the cylinder pressure relief

Appendix B

devices (PRDs) and as a result of cylinder rupture. PHMSA estimates that millions of oxygen cylinders are safely being transported and used every year.

In response to I-07-1, we share your concern about the potential safety hazards posed by the transportation of oxidizing gases such as oxygen in pressurized aluminum cylinders. We recently amended the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) to require the set pressure for PRDs installed on cylinders used to transport flammable and poisonous gases to be set at the cylinder test pressure with a tolerance of +0/-10%. This action will extend the time before PRDs actuate without compromising the strength of the cylinder or significantly increasing the probability that the cylinder will burst because of extreme pressure build-up. We have an active rulemaking project to consider applying this requirement to cylinders containing oxidizing gases such as oxygen, which should further enhance safety for both partially pressurized and full cylinders.

PHMSA met with NTSB on October 26 and November 1 and discussed each of the above NTSB recommendations. PHMSA technical experts provided technical rationale (e.g. test data, charts) describing the operation and performance of aluminum cylinders fitted with PRDs used for the transport of oxygen under various fire scenarios. During our meeting, PHMSA presented test data and charts to demonstrate that the use of temperature-activated PRDs would not have reduced the probability of a cylinder rupture in the Wilmer, Texas incident. Our analysis of the factors affecting the effectiveness of PRDs on partially filled cylinders is provided in the enclosed paper. PHMSA will continue to work with the Compressed Gas Association to explore possible options for enhancing oxidizing and flammable gas cylinder survivability in various fire situations.

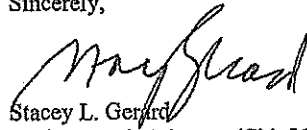
In response to I-07-02, we will work with the emergency response community to develop and disseminate guidance and training material. Soon after the Wilmer, Texas accident, we developed and issued guidance to bus and train operators to assure that medical oxygen being transported for passengers' personal use is handled and transported safely. We agree that emergency responders should receive guidance and training concerning the risks associated with fires involving aluminum cylinders and the steps that should be taken to protect both emergency responders and the general public when such cylinders are involved in a vehicle fire. We are partnering with the International Association of Fire Chiefs (IAFC) to develop a Hazmat Fusion Center, a shared information network for first responders. A key function of the Hazmat Fusion Center will be information dissemination, including updated hazardous materials training and guidance material for first responders. We are also working with the National Fire Academy to review the compressed gas cylinder training that is part of the Hazardous Material Responder curriculum. We will also work with other emergency response organizations, such as the National Association of State Fire Marshals, and industry groups, such as the Compressed Gas Association, to develop and disseminate guidance and training information.

Appendix B

We request that you classify recommendations I-07-1 and I-07-2 as "Open – Acceptable Action." We thank you for consideration of our request.

If you have any questions, please contact me at (202) 366-4831.

Sincerely,



Stacey L. Gerard
Assistant Administrator/Chief Safety Officer

Enclosure

**PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION
OFFICE OF HAZARDOUS MATERIALS SAFETY**

**Operation of Temperature-Actuated Pressure Relief Devices
On Partially Filled Cylinders**

- In the Wilmer, Texas incident, the use of temperature-actuated pressure relief devices (PRDs) would not have reduced the probability of a cylinder rupture. Since temperature actuated PRDs are designed to vent at 165^o F or 212^o F, if these oxygen cylinders were equipped with only temperature-actuated PRDs the oxygen would have released earlier. Even if there were a temperature-actuated PRD designed to operate with partially filled cylinders, the initial release of oxygen from one or more of the partially filled cylinders into the confined space of the luggage bay would have introduced enough oxygen to locally intensify the fire and cause the catastrophic rupture of the adjacent cylinders. Further, in the case of partially filled cylinders that are exposed to a fire, the PRD of each cylinder may operate differently based on each cylinder's proximity to the fire and the means of heat transfer. For example, the PRD on a cylinder exposed to an engulfing fire would operate differently from the PRD on a cylinder exposed to an impinging fire. A temperature activated PRD will not prevent cylinder rupture in the case of localized heating, for instance from flame impingement. In most cases, flame impingement can be avoided by stowing cylinders vertically or, for instance, in the case of a bus or passenger train compartment by separating them from each other. This was one of the recommended practices that we identified in the guidance that PHMSA issued to bus and train operators on June 30, 2006, entitled "DOT Guidance for the Safe Transportation of Medical Oxygen for Personal Use on Buses and Trains." We believe that this guidance will help prevent incidents such as the Wilmer, Texas incident in the future.
- With regard to the recommendation that the cylinder pressures be reduced to limits that would increase transportation safety, PHMSA believes that the function of the PRD on fully or partially charged cylinders would not significantly change the outcome of an accident such as the Wilmer, Texas occurrence. Consumers who use oxygen cylinders are not trained or equipped to discharge oxygen to a predetermined pressure level. The proposal to place this responsibility in the hands of the public would increase the risk of cylinder explosions due to improper cylinder discharging techniques (e.g. use of greasy hands or equipment at the time of discharge).
- Our analysis supports the concept that in some circumstances a partially-filled cylinder can experience overpressure failure before the pressure causes the PRD to activate. However, we believe that in all of these potential cases, the cylinder will fail in ductile fracture rather than brittle fracture. Therefore the potential for danger to the public and emergency responders is significantly less than would be expected from the shrapnel created in a brittle failure. We also believe that a condition for overpressure failure depends upon two major factors, high temperature and exposure to high temperature for an extended period of time. These are temperature regimes in which unprotected

**National Transportation Safety Board (NTSB)
and
DOT Office of Inspector General (OIG):**

**Open Safety Recommendations on
Pipeline and Hazardous Materials Safety**

**Appendix C:
Status of Open OIG Recommendations for Pipeline and
Hazardous Materials Safety**

**U.S. Department of Transportation
January 2011**

**Appendix C: Status of Open OIG Recommendations for Pipeline and Hazardous
Materials Safety**

**OIG Recommendations
“New Approach Needed in Managing FAA’s Hazardous Materials Program”
November 19, 2004**

Status as of: December 2010

OIG Recommendation to FAA	FAA Action/Status
Institute guidelines and timeframes for conducting hazardous materials investigations, conducting legal reviews, and issuing Notices of Proposed Civil Penalties through the coordinated efforts of the Hazardous Materials Division and Office of the Chief Counsel.	On September 26, 2005, FAA issued Change 31 to Order 2150.3A instituting guidelines and timeframes for completing investigation and enforcement cases. FAA will further amend Order 2150.3A (as Order 2150.3B). FAA Order 2150.3B was signed on October 1, 2007. Completed. Closed.
Implement a nationwide plan to distribute equitably the number of hazardous materials enforcement cases per attorney.	The FAA has implemented a plan. Regional attorneys are distributing cases equitably. Completed. Closed.
Develop and implement alternate means of administering hazardous materials enforcement cases, such as the ticketing system used by PHMSA.	The FAA is developing a Notice of Proposed Rulemaking. Open
Finalize and implement the FAA voluntary disclosure reporting program. FAA needs to take a systematic approach in effectively managing the program, to include disseminating all useful information to the air carriers, hazardous materials shippers, and DOT’s Operating Administrations with hazardous materials oversight and enforcement responsibilities.	The FAA published a voluntary disclosure advisory circular on January 31, 2006. Completed. Closed.
Implement a pilot project with the Transportation Security Administration (TSA) and one or more air carriers to determine the effectiveness and cost of an automated operating system to record and process violations of hazardous materials regulations discovered during the screening of passengers’ carry-on and checked baggage. In the interim, collaborate with TSA to implement system-wide procedures for notifying FAA of hazardous materials incidents associated with passengers’ carry-on baggage.	The FAA and TSA have established a system to electronically coordinate information on hazardous materials abandoned at security checkpoints. Completed. Closed.
Issue an advisory circular notifying all air carriers that they must report to FAA all unauthorized hazardous materials found in	The PHMSA made regulatory changes on October 1, 2006, requiring air carriers to give FAA the address of the violator. FAA’s Advisory Circular 121-38,

**Appendix C: Status of Open OIG Recommendations for Pipeline and Hazardous
Materials Safety**

<p>passengers' checked baggage and take enforcement actions against those air carriers not complying with the reporting requirements.</p>	<p>issued on January 17, 2007, implemented this recommendation.</p> <p>Completed. Closed.</p>
<p>Develop and implement a covert testing program to evaluate air carriers' compliance with the required acceptance procedures for hazardous materials shipments by air. Preferably, a joint program would be established in which FAA works with TSA.</p>	<p>The FAA drafted a set of targeted covert Hazmat testing protocols and requested an exemption from the Hazardous Materials Regulations (HMR) to conduct covert tests using no hazardous materials. PHMSA denied FAA's request on safety grounds. PHMSA maintains that allowing a package that is mis-described and labeled or packaged on a passenger-carrying aircraft could adversely affect a pilot's decision during an inflight emergency and possibly jeopardize the health and safety of passengers and crew.</p> <p>Completed. Closed.</p>

**Appendix C: Status of Open OIG Recommendations for Pipeline and Hazardous
Materials Safety**

In the January 2010 report PHMSA reported on the status of the areas of concern listed in the July 28, 2009 OIG Management Advisory “Immediate Actions Needed to Prevent Unsafe Packaging and Transport of Explosives under Special Permit Numbers 8554, 11579, and 12677.” It has been determined that this document did not actually contain OIG Recommendations and therefore this document has been deleted from this report.

**OIG Recommendations
“New Approaches Needed in Managing PHMSA’s Special Permits
and Approvals Program”
March 4, 2010**

Status as of: December 2010

OIG Recommendation to PHMSA	PHMSA Action/Status
<p>Finalize and fully implement the action plans to improve the effectiveness of processing special permits and approvals.</p>	<p>On August 6, 2009, the PHMSA began implementation of an accelerated and comprehensive action plan to improve its management of the special permits program.</p> <p>On November 6, 2009, the PHMSA completed a similar comprehensive review of its policies and procedures for issuing approvals. The PHMSA began an action plan to enhance and improve management and oversight of the approvals program on December 4, 2010. Consistent with the plan for Special Permits, this plan was developed to improve the effectiveness of the approvals program.</p> <p>On February 5, 2010, the PHMSA completed the implementation of the action plan for special permits and on June 1, 2010, the PHMSA completed the development and implementation of the action plan for approvals.</p> <p>On December 23, 2010, the PHMSA sent a memorandum to the OIG requesting closure.</p> <p>Open</p>

Appendix C: Status of Open OIG Recommendations for Pipeline and Hazardous Materials Safety

<p>Finalize and fully implement formal standard operating procedures and policies for special permit and approval processes (i.e., application, evaluation, authorization, agency coordination, and oversight).</p>	<p>In October 2009, the PHMSA completed and implemented standard operating procedures (SOPs) for the special permits program. In March 2010, the PHMSA finalized and implemented all SOPs for the approvals program.</p> <p>Completed. Closed.</p>
<p>Establish priorities for implementing each of the initiatives in the action plans as well as a process to measure the effectiveness of each initiative and revise or update initiatives as necessary.</p>	<p>The PHMSA developed detailed project plans for each of the initiatives. The project plans for the initiative included milestones, due dates, staffing, and resource priorities.</p> <p>Completed. Closed.</p>
<p>Resolve the issue of company fitness and level of safety for existing special permits issued to trade associations representing over 5,000 companies by requiring these companies to reapply under the new policy guidelines that require evaluating a company's fitness and level of safety.</p>	<p>On August 17, 2009, the PHMSA issued a written policy to clarify that special permits are only granted to member companies of associations, not to associations. On May 1, 2010, the PHMSA released a new policy to mandate all applicants utilize the PHMSA's new on-line process for special permits.</p> <p>On May 4, 2010, PHMSA began to notify the individual members of its intent to modify (or terminate when appropriate) the special permits and approvals granted to association members collectively. Specifically, the PHMSA sought applications from each individual grantee in order to determine fitness of each entity.</p> <p>The PHMSA has also identified a number of special permits and approvals with long-standing safety records that are widely used by industry, including those granted to members of associations. The PHMSA is aggressively working to convert these special permits and approvals into the regulations for broader use across industry.</p> <p>On May 14, 2010, the PHMSA published "Hazardous Materials: Incorporation of Special Permits into Regulations," the first final rule in a series of rules to convert the special permits into regulations.</p> <p>On July 21, 2010, the PHMSA published a Notice of Proposed Rulemaking (NPRM) "Hazardous</p>

Appendix C: Status of Open OIG Recommendations for Pipeline and Hazardous Materials Safety

	<p>Materials: Incorporation of Certain Cargo Tank Special Permits into Regulations.”</p> <p>The PHMSA has planned rulemakings to be initiated in 2011 to address all remaining special permits and approvals issued to associations by incorporating them in to rulemaking. On December 23, 2010, the PHMSA sent a memorandum to the OIG requesting closure.</p> <p>Open</p>
<p>Develop a precise definition of what constitutes an applicant’s “fitness” to conduct the activity authorized by the special permit or approval. This definition should include reviewing an applicant’s safety history-incidents and enforcement actions-prior to granting a special permit or approval.</p>	<p>On June 1, 2010, the PHMSA implemented a clearly defined process and criteria used to determine the fitness of applicants for special permits and approvals.</p> <p>Together with its safety partners in the Federal Motor Carrier Safety Administration, the Federal Railroad Administration, the Federal Aviation Administration, and the U.S. Coast Guard (USCG), the PHMSA completed a comprehensive review of existing fitness determination processes and developed a refined process for evaluating fitness based on identified metrics related to a company’s safety history.</p> <p>By utilizing safety data from several existing sources, the agencies can now use performance-based measures to evaluate an applicant’s past safety history and ability to operate under the terms of the special permit as indicated in its application.</p> <p>On August 19, 2010, the PHMSA hosted a public meeting to receive feedback from stakeholders on the initial fitness review criteria. The PHMSA is reviewing the transcripts of the meeting as well as comments provided afterward. The PHMSA is continuing to work with modal partners to streamline and better define the indicators of safety fitness.</p> <p>On December 23, 2010, the PHMSA sent a memorandum to the OIG requesting closure.</p> <p>Open</p>

**Appendix C: Status of Open OIG Recommendations for Pipeline and Hazardous
Materials Safety**

<p>Require the Office of Hazardous Materials Technology to conduct and prepare complete evaluations that document the level of safety the company or individual is proposing is as safe as or safer than requirements from which the company is seeking relief.</p>	<p>The PHMSA developed a new safety evaluation form that documents pertinent information to determine if a special permit will provide a level of safety equivalent to that provided under the HMR. This pertinent information consists of the following: risks of materials to be transported, the type of packaging to be utilized, the mode of transport to be utilized, the conditions likely to be encountered during transportation, and pertinent special handling measures or operational requirements.</p> <p>On February 2, 2010, the PHMSA implemented a similar process for consistent and uniform documentation of activities authorized under an approval.</p> <p>The PHMSA is amending its procedural regulations to require applicants to provide additional data and information concerning the risks of the proposed operations and the measures to be utilized to address the risks.</p> <p>The Office of Management and Budget (OMB) must approve the new application requirements under the Paperwork Reduction Act. OMB approval is expected in early 2011.</p> <p>On December 23, 2010, the PHMSA sent a memorandum to the OIG requesting closure.</p> <p>Open</p>
<p>Establish a partner safety interagency working group to develop a uniform process for coordinating special permits, including new, renewal, "party-to," and emergency permits as well as new and renewed approvals.</p>	<p>On September 4, 2009, the PHMSA established a working group with its partner safety agencies in DOT and USCG. The working group established specific interagency coordination and concurrence guidelines for special permit applications.</p> <p>Completed. Closed.</p>
<p>Include "holders of special permits and approvals" as a priority factor in PHMSA's risk-based oversight approach in targeting companies for compliance reviews.</p>	<p>On September 4, 2009, the PHMSA and its partner safety agencies issued a plan for enhanced enforcement of special permits and approvals, utilizing the resources of all the operating administrations with enforcement responsibility and available data to identify potential safety problems and target resources.</p>

Appendix C: Status of Open OIG Recommendations for Pipeline and Hazardous Materials Safety

<p>Establish timeframes for resolving and implementing long-standing safety concerns and periodically measure performance against the timeframes.</p>	<p>Completed. Closed.</p> <p>OIG identified two long-standing safety issues involving special use bulk explosive vehicles and lithium batteries.</p> <p>On August 6, 2009, the PHMSA implemented within its Special Permits Action Plan, an approach for addressing safety issues associated with special use bulk explosives vehicles.</p> <p>Adhering to very aggressive timelines for completion, the PHMSA completed safety performance and fitness reviews of the current special permit holders; performed a risk analysis to ensure the special permits address all possible safety issues, including the potential for a high-consequence (catastrophic) accident; and developed additional safety measures to address identified risks.</p> <p>On September 4, 2009, the PHMSA completed its review of these special permits and issued revised special permits incorporating a number of enhanced safety requirements on October 5, 2009, resolving this issue.</p> <p>On January 11, 2010, the PHMSA published an NPRM "Transportation of Lithium Batteries" to comprehensively address the safe transport of lithium cells and batteries. The final rule, currently under review at OMB, requires significant enhancements to hazard communication and represents another step in PHMSA's continuing process to ensure the safe transport of lithium batteries and builds on regulations published in 2004, 2007, and 2009. The PHMSA anticipates publishing a final rule in early 2010.</p> <p>On December 23, 2010, the PHMSA sent a memorandum to the OIG requesting closure.</p> <p>Open</p>
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**Appendix C: Status of Open OIG Recommendations for Pipeline and Hazardous
Materials Safety**

<p>Establish a National Task Force to develop standard procedures for facilitating the adoption of special permits and approvals into the Hazardous Materials Regulations in order to keep the current regulatory framework in sync with advanced technologies and business practices.</p>	<p>On February 5, 2010, the PHMSA finalized a plan to establish a systematic process for reviewing outstanding special permits and incorporating them, where appropriate, into the HMR. As part of this plan the PHMSA has designated a special team to review all currently active special permits (about 1,250) and identify those that should be incorporated into the HMR. Once the review of the active special permits is completed, expected by mid 2013, the PHMSA will routinely review recently granted special permits each year and will initiate a rulemaking to propose incorporating them into the HMR as warranted.</p> <p>Completed. Closed.</p>
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**National Transportation Safety Board (NTSB)
and
DOT Office of Inspector General (OIG):**

**Open Safety Recommendations on
Pipeline and Hazardous Materials Safety**

**Appendix D:
Responses to OIG Recommendations**

**U.S. Department of Transportation
January 2011**

Appendix D: Responses to OIG Recommendations

This Appendix includes responses to OIG on the open OIG recommendations as requested by the Norman Y. Mineta Research and Special Programs Improvement Act.

Recommendations	Date Recommendation Issued	Documentation at Pages:
New Approach Needed in Managing FAA's Hazardous Materials Program	11/19/04	2-7
New Approaches Needed in Managing PHMSA's Special Permits and Approvals Program	3/4/10	8-17

APPENDIX. MANAGEMENT COMMENTS



U.S. Department
of Transportation
Federal Aviation
Administration

Memorandum

Subject: **INFORMATION:** New Approaches Needed in
Managing FAA's Hazardous Materials
Program, Federal Aviation Administration

Date: SEP 30 2004

From: Assistant Administrator for Financial Services
and Chief Financial Officer

**Reply to
Attn. of:**

To: Principal Assistant Inspector General for
Auditing and Evaluation

Thank you for your August 20 Memorandum and the attached draft audit report of the Federal Aviation Administration's Hazardous Materials Program. I appreciate the additional time you have allowed for us to provide written comments concerning the report and the recommendations.

The draft report has been reviewed by the Chief Counsel and the Assistant Administrator for Security and Hazardous Materials. A copy of our comments is attached. We have also provided an electronic word version of the comments for inclusion in the final report as you requested.

Should you have any questions or need additional information, please contact Anthony Williams on 267-9000.

A handwritten signature in black ink, appearing to read "R. Punwani".

Ramesh K. Punwani

Attachment

Federal Aviation Administration's (FAA) Response to the Office of Inspector General's Draft Report on New Approaches Needed in Managing FAA's Hazardous Materials (HAZMAT) Program

OIG Recommendation 1: Institute guidelines and timeframes for conducting HAZMAT investigations, conducting legal reviews, and issuing Notices of Proposed Civil Penalties through the coordinated efforts of the Hazardous Materials Division and Office of the Chief Counsel (AGC).

FAA response: Concur. The Assistant Administrator for Security and Hazardous Materials, ASH-1 will implement new timeframe goals for completion of legal enforcement HAZMAT investigations. The Chief Counsel is implementing new timeframe goals for initiating and completing HAZMAT enforcement cases. We expect that these goals will be adopted by December 31.

We understand that the guidelines referenced in this recommendation pertain to recommendation 3. We will adopt guidelines as part of our response to that recommendation. We recommend, therefore, that the reference to acceptable guidelines in this recommendation be deleted.

OIG Recommendation 2: Implement a nationwide plan to distribute equitably the number of HAZMAT cases per attorney.

FAA response: Concur. AGC is implementing a plan to more evenly distribute the HAZMAT cases among the FAA legal offices. This will be accomplished by December 31. ASH is implementing a plan to have appropriate cases originated in the region of the shipper; this will have the effect of more evenly distributing the case load among the regional offices. The Office of Security and Hazardous Materials expects to initiate a policy to distribute certain legal enforcement cases from the region where they are reported and initially investigated to the region where the shipper is located by December 31.

OIG Recommendation 3: Develop and implement alternate means of administering HAZMAT enforcement cases, such as the ticketing system used by Research and Special Programs Administration (RSPA).

FAA response: Partially Concur. The FAA has had successful experience with a streamlined enforcement process for certain cases involving passengers who carried weapons in their baggage. See 14 CFR § 13.29. Under this procedure the security division manager, not the attorney, issued notices of violation, which provided violators with the option of having his or her penalty reduced by 50 percent if the violator paid the penalty within 30 days. We expect to propose a similar alternative system for certain passenger HAZMAT violation cases. In addition, we will consider whether such an approach can also be used in other types of violations that are factually straightforward and involve relatively low-dollar penalties. Implementation

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of an alternative process will require rulemaking. We expect to have a draft Notice of Proposed Rulemaking in agency coordination by September 30, 2005.

OIG Recommendation 4: Finalize and implement the voluntary disclosure reporting program. FAA needs to take a systematic approach in effectively managing the program, to include disseminating all useful information to the air carriers, HAZMAT shippers, and Department of Transportation's Operating Administrations with HAZMAT oversight and enforcement responsibilities.

FAA response: Concur. The FAA has drafted a voluntary disclosure advisory circular that would apply to certain air operator requirements. The draft advisory circular is now being coordinated with other concerned lines of business within FAA, such as the Chief Counsel's Office and the Flight Standards Service. We expect to publish this advisory circular by December 31.

OIG Recommendation 5: Implement a pilot project with the Transportation Security Agency (TSA) and one or more air carriers to determine the effectiveness and cost of having an automated operating system to record and process violations of the HAZMAT regulations discovered during the screening of passengers' carry-on and checked baggage. In the interim, FAA should collaborate with the TSA to implement system-wide procedures for notifying FAA of HAZMAT incidents associated with passengers' carry-on baggage.

FAA response: Concur. Airport security screeners are not conducting a search for hazardous materials. They are conducting a search for weapons and prohibited items. The FAA does not support any initiative that would divert the attention of airport security screeners from their efforts to locate and remove weapons and other prohibited items.

The TSA issued an interpretative rule [68 FR 9902] that clarifies the types of property considered to be weapons, explosives and incendiaries. The TSA interpretative rule also advised passengers concerning the types of items prohibited by the Hazardous Materials Regulations (HMR). As part of their security duties, screeners do notice prohibited hazardous materials in plain view. Under an interpretation issued by the Department of Transportation, passengers who present prohibited hazardous materials at the screening checkpoint are in violation of the HMR. [68 FR 9735].

The FAA and the TSA currently have a Memorandum of Agreement (MOA) that includes a Hazardous Materials Annex that calls for the agencies to establish procedures for a referral process when the TSA finds a passenger with prohibited HAZMAT. While the FAA has received some referrals from the TSA, the TSA has not yet agreed to procedures to make such referrals routinely. FAA's Office of Security and Hazardous Materials is participating in an agency-wide initiative to revise the existing MOA with the Department of Homeland Security (DHS) and TSA. As part of this initiative, the FAA is seeking direct access to the hazardous materials

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information contained in the Dangerous Goods module of TSA's Performance and Reports Information System (PARIS). PARIS is the database that records the TSA's inspection and investigation findings. This Dangerous Goods module identifies passengers who have abandoned the most observable and dangerous hazardous materials at the security checkpoint. The FAA will raise the possibility of a pilot project to gain access to the relevant PARIS data as part of the initiative to revise the MOA with TSA/DHS. The Office of Security and Hazardous Materials expects to complete discussions with TSA/DHS concerning automated access to HAZMAT information about passenger's carry-on baggage by December 31.

OIG Recommendation 6: Issue an advisory circular notifying all air carriers that they must report to FAA all unauthorized HAZMAT found in passengers' checked baggage and take enforcement actions against those air carriers not complying with the reporting requirements.

FAA response: Concur. Concerning suspected unauthorized hazardous materials noticed by security screeners in checked baggage, these screeners bring such items to the attention of the respective air carrier for resolution. Air carriers, in turn, report these items to the FAA. Currently, the FAA is receiving over 1,000 such reports a month. In response to these reports, FAA has taken two actions. First, we have developed a database entry screen for field agents to enter and prioritize the details of these reports. Instances involving more serious HAZMAT are individually investigated while an automated outreach, educational notice is generated to the passengers responsible for the instances involving less serious HAZMAT. Approximately 2,000 reports have been processed in this manner. However in many cases, air carriers advise that they do not have, or cannot provide, the passenger's address. With tickets purchased over the internet, carriers report they do not always know their passenger's address. In addition, individual air carriers and the Air Transport Association have reported that they cannot always report the passenger's address to the FAA because of privacy concerns. Therefore, the FAA is coordinating with RSPA to amend the HMR to add a requirement for air carriers to provide the address of the passenger responsible for the incident, if they know it or can reasonably obtain it.

Additionally, the FAA has taken several actions to remind air carriers that they must comply with the requirements to report violations mandated by 49 CFR 175.31. The FAA conducts over 3,000 hazardous materials assessments of air carrier airport stations annually. As part of the assessment, FAA agents are required to ask airline representatives if they are aware of the HAZMAT reporting requirements and enter their response into the computerized inspection results. As indicated above, since the advent of 100% checked baggage security screening, FAA is currently receiving over 1,000 reports of unauthorized HAZMAT in checked luggage from air carriers each month. TSA's procedures call for security screeners who suspect unauthorized hazardous materials in checked baggage to notify the appropriate air carrier and to record the event in a log. FAA field agents check these TSA logs at airports and compare it to the reports received from air carriers. Occasionally, the

logs record an incident that was not reported to the FAA. In many of these cases, TSA screeners are recording suspected HAZMAT that is actually allowed under 49 CFR 175.10, and therefore no air carrier report to FAA is necessary. In a few cases, the logs list unauthorized HAZMAT, not reported to FAA as required. Recently, in several isolated cases, FAA sent Letters of Investigation to air carriers that apparently did not report unauthorized HAZMAT that were recorded by security screeners in various TSA logs. Air carriers have maintained that they are not always notified by screeners, as the TSA procedures call for, and that they are not allowed to review the logs themselves. Several of these cases are still under investigation by the FAA. The FAA will take enforcement action in accordance with FAA Order 2150.3A if these investigations find that reporting violations were committed.

Upon completion of the on-going discussions with TSA concerning the MOA and RSPA's rulemaking efforts, FAA will draft and issue an Advisory Circular clarifying the air carrier's HAZMAT reporting requirements. RSPA has notified the FAA that its timeline to complete a final rule revising these discrepancy reporting requirements and other requirements for the transport of hazardous materials by aircraft is February 2006. Given this timeline, the Office of Security and Hazardous Materials expects to issue an Advisory Circular by May 31, 2006.

OIG Recommendation 7: DOT's Office of Safety, Energy and Environment establish and implement a process for resolving HAZMAT regulatory disputes between the FAA and RSPA to ensure that the unique safety requirements for shipments of HAZMAT by air are being effectively addressed.

(Response provided by OST)

Other comments on the report:

The draft report notes the extent of the reduction in civil penalties from the amount recommended by the inspectors and the attorneys. While we do not dispute the accuracy of the OIG's findings in this regard, we believe the findings should be placed in context, and request that the final report reflect this context.

Penalties recommended by the inspectors are made before the attorney evaluates the sufficiency of the evidence that supports an alleged violation and the inspector's application of sanction guidance. The amount recommended by the inspector or proposed by the attorney both occur before an informal conference is held. It is at the informal conference that the FAA often becomes aware of circumstances that constitute a defense to an alleged violation or that warrant mitigation of the penalty (e.g., corrective action). Likewise, it is often after the penalty has been proposed that the agency is able, after receiving information from the alleged violator, to conduct the statutorily-mandated evaluation of the violator's ability to pay, which frequently results in a reduction from the recommended penalty.

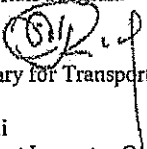


U.S. Department of
Transportation
Office of the Secretary
of Transportation

Memorandum

Date: September 21, 2004

Subject: **Action:** Response to Draft Report on New
Approaches Needed in Managing FAA's
Hazardous Materials Program

From: Emil H. Frankel 
Assistant Secretary for Transportation Policy

To: Alexis M. Stefani
Principal Assistant Inspector General
for Auditing and Evaluation

Within the office of the Assistant Secretary for Policy, the Office of Safety, Energy and Environment (OSEE) is the focal point for intermodal DOT hazardous materials (hazmat) issues. This office is working to foster a department-wide approach to implementing hazardous materials programs. One office responsibility is to facilitate the resolution of disagreements among operating administrations on hazmat issues where they have been unable to reach a mutually agreed on solution. OSEE was already aware of the differences between FAA and RSPA cited in the OIG draft report, and has initiated a process to resolve outstanding hazmat disputes and reach agreement on appropriate actions necessary to fully and appropriately protect the public and the transportation infrastructure.

RECOMMENDATION AND RESPONSE

Recommendation 7: Establish and implement a process for resolving HAZMAT regulatory disputes between FAA and RSPA to ensure that the unique safety requirements for shipments of HAZMAT by air are being effectively addressed.

Response: Concur. OST Policy, FAA, and RSPA, are developing a plan of action that will identify the steps needed to resolve the areas of concern identified in the OIG draft report. This process will be used as a model to address any future disagreements between the operating administrations. We anticipate having this process formalized by February 2005, completing this recommendation.

APPENDIX. AGENCY COMMENTS



U.S. Department
of Transportation
Pipeline and Hazardous Materials
Safety Administration

Administrator

1200 New Jersey Avenue, SE.
Washington, DC 20590

February 25, 2010

**INFORMATION MEMORANDUM TO THE ASSISTANT INSPECTOR
GENERAL FOR AVIATION AND SPECIAL PROGRAM AUDITS**

From: Cynthia L. Quarterman
x6-4433

A handwritten signature in black ink, appearing to read 'C. Quarterman', with a long horizontal line extending to the right.

Prepared by: Cindy Douglass
Assistant Administrator/Chief Safety Officer
x6-4461

Subject: Response to Draft Report on PHMSA's Special Permits
and Approvals Program

SUMMARY

The Pipeline and Hazardous Materials Safety Administration (PHMSA) has taken swift and comprehensive action to ensure that the process for issuing special permits and approvals for the transportation of hazardous materials functions effectively to protect public safety. PHMSA has fully addressed all specific issues identified in the DOT Office of Inspector General (OIG) review of the Office of Hazardous Materials Safety (OHMS) Special Permits and Approvals Program. PHMSA conducted a top-to-bottom review of its policies, procedures, practices, and staffing, and implemented action plans with aggressive timeframes that have already significantly improved oversight and accountability. We are dedicated to ensuring that operations authorized by special permits and approvals meet the same high safety standard provided by the Hazardous Materials Regulations (HMR).

PHMSA has committed to and is executing the following three action plans:

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- Action Plan for Special Permits Program;¹
- Action Plan for IT Modernization and Data Collection/Analysis; and
- Action Plan for Approvals Program.²

The Agency has completed the tasks within each of these plans on schedule and is on target to fulfill each action plan. The action plans are “living” documents that will be continuously reviewed to improve processes and regulations relating to special permits and approvals and ensure they are up-to-date. PHMSA is committing significant new budget and staffing resources to this effort and will continue to do so as it works with its partners within DOT and the U.S Coast Guard to manage the program. Our commitment to ensure the effectiveness of these vital programs includes PHMSA’s leadership and management team, the leadership of our partner agencies in DOT, as well as the Secretary and the Deputy Secretary.

PHMSA’s actions, in total, systematically address each of the issues identified in the OIG report, and offer decisive actions with regard to strengthening the special permits and approvals programs. As conveyed in the following responses to OIG’s specific recommendations, PHMSA has already completed action pursuant to several of the recommendations, with remaining actions well underway.

PHMSA ACTIONS TO ADDRESS RECOMMENDATIONS

1. **Finalize and fully implement the action plans to improve the effectiveness of processing special permits and approvals.**

PHMSA Response

Concur. On August 6, 2009, PHMSA finalized and began implementation of an accelerated and comprehensive action plan to improve its management of the special permits program. One main focus of the action plan is to ensure that the program functions as intended to provide a level of safety for transportation of hazardous materials authorized under special permits that is equivalent to the HMR. The action plan takes into account existing personnel, budget and information technology. It addresses: (1) the process and procedures used to manage the program; (2) the criteria used to assess and document an equivalent level of safety; (3) the process for evaluating the fitness of applicants and their safety performance; (4) the need for increased compliance audits and oversight of special permit holders; (5) the requirement of enhanced accountability of those operating under the terms of special permits; and (6) the need to modernize the information technology (IT) system that supports the program. All of the initiatives with specific deadlines are complete. For

¹ [Link to Action Plan for Special Permits](#)

² [Link to Action Plan for Approvals Program](#)

example, PHMSA has completed the following action items to enhance its oversight of the special permits program:

- Published a written policy on special permits issued to members of industry trade associations or similar industry organizations to clarify that special permits are issued to member companies only, not to the association or organization.
- Reviewed and revised the criteria, policy, and procedures used to make the statutorily mandated “equivalent level of safety” determination that must be met for the issuance of a special permit to ensure that the standard is met and supported with appropriate documentation.
- Reviewed and revised the policy and procedures for determining the fitness of special permit applicants, including the criteria considered in determining “fitness” (such as past safety record, previous incidents and violations, staffing and resources, and carrier safety rating if applicable) and the process and criteria for initiating on-site fitness reviews to ensure that fitness determinations are well-founded and supported with appropriate documentation.
- Revised procedures for coordinating the issuance of special permits with FAA, FRA, FMCSA, and the USCG, including methods to evaluate the fitness of applicants to conduct the activities authorized by the special permit.
- Developed a plan to provide enhanced enforcement of the terms of special permits, taking advantage of the resources of all the operating administrations with responsibility for enforcing HMR.
- Developed a plan for enhancing the availability of data needed to provide the necessary oversight to ensure that holders of special permits are operating safely and within the conditions established in the special permits.
- Revised the standard operating procedures governing the entire special permits program, including procedures for evaluating applications, determining a level of safety equivalent to the regulations, and monitoring activities conducted under the special permits.

PHMSA completed a similar comprehensive review of its policies and processes for issuing approvals on November 6, 2009, and finalized an action plan to improve management and oversight of the approvals program on December 4, 2009. PHMSA has met all the deliverables to date and is on target to meet all planned deliverables in the approvals action plan. With the action plans finalized, and comprehensive actions underway to complete implementation, we consider the intent of this recommendation to be fulfilled.

2. **Finalize and fully implement formal standard operating procedures and policies for special permit and approval processes (i.e., application, evaluation, authorization, agency coordination, and oversight).**

PHMSA Response

Concur. PHMSA completed and implemented standard operating procedures (SOPs) for the special permits program on October 5, 2009. The SOPs incorporate a number of program enhancements, including standardized documentation and retention requirements for applications, safety assessments, fitness evaluations, internal and intermodal coordination records, and all relevant background, data and analysis. Further, the SOPs incorporate a rigorous process for determining if a special permit will achieve an equivalent level of safety as provided by the HMR and a comprehensive review and inspection procedure for making determinations as to the fitness of special permit applicants, including specific processes and metrics for defining and evaluating fitness.

Pursuant to its Approvals Action Plan, PHMSA is in the process of developing similar SOPs for the approvals program. PHMSA has already finalized and implemented a number of enhanced procedures for the approvals program, including procedures for safety assessment, fitness evaluations, and internal and intermodal coordination. The Agency is on target to complete and fully implement all SOPs for the approvals program by March 4, 2010.

3. **Establish priorities for implementing each of the initiatives in the action plans as well as a process to measure the effectiveness of each initiative and revise or update initiatives as necessary.**

PHMSA Response

Concur. The initiatives in the action plans are listed according to a combination of criteria based on due dates, timeframes for completion, logical order for progression and their anticipated safety impact, overall urgency, staffing and budget resources. Thus, for each program, the first priority initiative was to complete a broad-based, top-to-bottom review covering current operating procedures, staff responsibilities, documentation of procedures, criteria for equivalent level safety assessments, fitness review criteria and processes, and coordination with DOT operating administrations. PHMSA has completed these reviews and identified a means to enhance procedures, reduce redundancies, and increase oversight and accountability.

Data improvement and IT modernization is another high priority, offering the potential to use enhanced data analysis to strengthen program oversight. The

information system that supports the special permits program is at the end of its useful life and no longer effectively supports the program's requirements. System modernization will enable the agency to process applications and synthesize safety and performance information about companies applying for special permits and approvals more efficiently. Due to the importance of this initiative, PHMSA temporarily assigned a senior staff member to serve as a technical advisor, responsible for planning and executing this action plan.

The effectiveness of the actions taken to address each initiative is being monitored by a specially designated management team. We consider the initiatives in each plan to be "living" documents that may be revised based on lessons learned. The team routinely evaluates whether action items are complete or whether additional revisions are needed. Senior management reports to the Administrator and to the Deputy Secretary upon the completion of each item. With the priorities established for the action plans, and a special team established to ensure that actions taken are effective, we consider this recommendation to be complete.

4. **Resolve the issue of company fitness and level of safety for existing special permits issued to trade associations representing over 5,000 companies by requiring those companies to reapply under the new policy guidelines that require evaluating a company's fitness and level of safety.**

PHMSA Response

Concur. On August 17, 2009, PHMSA issued a written policy to clarify that special permits are only granted to members of associations, not to associations. Authority to perform a transportation activity under the terms of a special permit must be exercised by the individual business entity that bears responsibility for compliance under the terms of the special permit. (The policy is at [Link to Special Permit and Approval Policy](#))

As an interim measure, on September 4, 2009, PHMSA re-issued all special permits granted to members of associations to specifically indicate that it is the members of the association who are responsible for compliance with the terms of the special permit.

PHMSA plans to re-issue all safety permits previously granted to members of associations through their associations as quickly as resources permit. The Agency estimates that at least 20,000-30,000 entities will be affected. After May 1, 2010, (the date by which PHMSA will implement a new on-line application process for special permits), PHMSA will require all association members granted special permits to reapply. PHMSA will evaluate each firm's safety fitness before it re-issues the

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special permits. The timeframe for completing this process will depend on the number of entities that elect to reapply and available resources.

Currently, PHMSA processes about 3,000 special permits applications per year. Utilizing additional resources and the on-line application process will enhance the Agency's ability to evaluate special permit applications, but it will likely require at least two years to evaluate the fitness of those association members that re-apply for special permits. PHMSA will develop a more specific plan as it receives the applications.

Concurrently, PHMSA is reviewing the 20 active special permits issued to members of associations to identify those that should be incorporated into the HMR. Where appropriate, conversion of such special permits to regulations of general applicability is a major priority. PHMSA has already initiated two rulemakings to address association membership special permits related to cargo tank and rail tank car operations. The cargo tank rulemaking applies to a significant number of special permit holders. PHMSA expects to issue notices of proposed rulemakings for these two projects this spring and final rules as quickly thereafter as possible. Additional rulemakings to incorporate the remaining special permits issued to members of associations into the HMR will be completed by January of 2012.

5. **Develop a precise definition of what constitutes an applicant's "fitness" to conduct the activity authorized by the special permit or approval. This definition should include reviewing an applicant's safety history – incidents and enforcement actions – prior to granting a special permit or approval.**

PHMSA Response

Concur. PHMSA is working to more clearly define the process and criteria used to determine the fitness of applicants for special permits or approvals. This action will be completed by June 1, 2010. The determination of fitness in a complex and variable transportation operating environment exemplified by the special permits program requires the expert application of specific criteria concerning a company's safety performance together with an overall assessment of the risks inherent in the operations under consideration, including such factors as hazardous material type, quantity, and form; the transport mode and routes of operation; and the frequency and location of the operation.

Together with its safety partners in FMCSA, FRA, FAA, and the USCG, PHMSA completed a comprehensive review of existing fitness determination processes and developed a refined process for evaluating fitness, based on identified metrics related

to a company's safety history. Utilizing safety data from several existing sources, the agencies can now use performance-based measures to evaluate an applicant's past safety history and ability to operate under the terms of the special permit as indicated in its application. PHMSA is working to further fine-tune this process.

Currently, PHMSA conducts fitness reviews of all entities applying for a special permit or approval using historical data records of incidents and violations. Where the record appears to be questionable, the company will be required to explain its record and the actions it has taken to resolve any safety problems, such as additional training or revisions to operating practices, as a condition of receiving the special permit or approval. If PHMSA determines that the company is unable to meet safety fitness requirements, PHMSA will not issue the special permit or approval and may take action to modify or terminate other special permits or approvals held by the company. PHMSA will prioritize the monitoring of such a company to assure that it meets the safety requirements of the special permit. If PHMSA determines that a company's safety record represents the risk of significant harm, PHMSA will terminate a special permit or approval.

6. **Require the Office of Hazardous Materials Technology to conduct and prepare complete evaluations that document the level of safety the company or individual is proposing is as safe or safer than requirements from which the company is seeking relief.**

PHMSA Response

Concur. PHMSA developed a new safety evaluation form to document pertinent information regarding whether a special permit will provide a level of safety that is at least equivalent to that provided under the HMR. The safety evaluation considers the risks of the materials to be transported, the type of packaging to be utilized, the mode of transport to be utilized, the conditions likely to be encountered during transportation, and pertinent special handling measures or operational requirements. These factors are all documented on the form. Further, on February 2, 2010, PHMSA implemented a similar process for consistent and uniform documentation of activities authorized under an approval. To ensure that the Agency has complete information, PHMSA is amending its procedural regulations to require applicants to provide additional data and information concerning the risks of the proposed operations and the measures to be utilized to address the risks. The Office of Management and Budget (OMB) must approve the new application requirements under the Paperwork Reduction Act. OMB approval is expected by December 2010.

7. **Establish a partner safety interagency working group to develop a uniform process for coordinating special permits, including new, renewal, “party-to,” and emergency permits as well as new and renewed approvals.**

PHMSA Response

Concur. PHMSA established a working group with its partner safety agencies in DOT and the U.S. Coast Guard on September 4, 2009. The working group established specific interagency coordination and concurrence guidelines for special permit applications. The guidelines ([Link to Guidelines](#)) specify that PHMSA will approve or deny applications only after coordination with the operating administrations and provide for the operating administrations to notify PHMSA of any violations of a special permit by the grantee that would call its fitness into question. The special permits SOPs, implemented October 5, 2009, incorporate detailed procedures for coordinating special permit applications with the operating administrations. On February 2, 2010, PHMSA finalized and implemented a similar process for interagency coordination of approval applications. Therefore, the necessary actions envisioned by this recommendation are complete.

8. **Include “holders of special permit and approvals” as a priority factor in PHMSA’s risk-based oversight approach in targeting companies for compliance reviews.**

PHMSA Response

Concur. PHMSA’s Office of Hazardous Materials Enforcement has implemented a national business strategy to prioritize its activities. Activities authorized under Special Permits and Approvals are targeted as inspection and oversight priorities of the Office. This national business strategy is available online at ([Link to National Business Strategy](#)). In addition, on September 4, 2009, PHMSA in concert with its partner operating administrations issued a plan for enhanced enforcement of the terms of special permits and approvals, utilizing the resources of all the operating administrations with enforcement responsibility and available data to identify potential safety problems and target resources. The plan includes inspection procedures specific to special permit and approval grantees and inspection target goals. While the compliance reviews will be conducted on a continuous basis, with the priorities established, action on this recommendation is complete.

9. **Establish timeframes for resolving and implementing long-standing safety concerns and periodically measure performance against timeframes.**

PHMSA Response

Concur. The OIG identified two long-standing safety issues involving special use bulk explosive vehicles and lithium batteries. PHMSA included a plan for addressing safety issues associated with special use bulk explosive vehicles as part of the special permits action plan it implemented August 6, 2009. Adhering to very aggressive timelines for completion, PHMSA completed safety performance and fitness reviews of the current special permit holders; performed a risk analysis to ensure the special permits address all possible safety issues, including the potential for a high-consequence (catastrophic) accident; and developed additional safety measures to address identified risks. PHMSA completed its review of these special permits on September 4, 2009, and issued revised special permits incorporating a number of enhanced safety requirements on October 5, 2009, resolving this issue.

PHMSA is also taking action to address lithium battery safety. On January 11, 2010, PHMSA published an NPRM to address comprehensively the safe transport of lithium cells and batteries. The NPRM represents another step in PHMSA's continuing process to ensure the safe transport of lithium batteries and builds on regulations published in 2004, 2007, and 2009. The rulemaking will strengthen the current regulatory framework by imposing more effective safeguards, including design testing, packaging, and hazard communication measures for various types and sizes of lithium batteries in specific transportation contexts. Several of the proposals are based on recommendations issued by the National Transportation Safety Board. PHMSA plans to publish a final rule by December 2010.

With the special use bulk explosive vehicles issue resolved, and a rulemaking in process for lithium batteries transport in process, timelines have been established for these issues, and this recommendation is considered closed. More broadly, PHMSA's enhanced oversight of the special permits and approvals programs, along with an enhanced working relationship with its partner agencies, will enable the agency to quickly identify potential safety issues to better ensure that future issues do not become long standing issues. In addition, for safety problems identified through PHMSA's enhanced monitoring and enforcement efforts, recommendations from the enforcement staff will be referred to a team of specialists to evaluate and act on the recommendations within specified timeframes.

10. **Establish a National Task Force to develop standard procedures for facilitating the adoption of special permits and approvals into the Hazardous Materials Regulations in order to keep the current regulatory framework in sync with advanced technologies and business practices.**