

June 26, 2008



U.S. Department  
of Transportation

East Building, PHH-30  
1200 New Jersey Avenue S.E.  
Washington, D.C. 20590

**Pipeline and Hazardous  
Materials Safety Administration**

DOT-SP 14628

**EXPIRATION DATE: May 31, 2010**

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: National Aeronautics and Space Administration  
Washington, DC
2. PURPOSE AND LIMITATION:
  - a. This special permit authorizes the transportation in commerce of a non-DOT specification pressure vessel containing compressed hydrogen, which is a component part of a nickel-hydrogen battery. This special permit provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.
  - b. The safety analyses performed in the development of this special permit only considered the hazards and risks associated with the transportation in commerce.
  - c. No party status will be granted to this special permit.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 173.301(f), 173.302a(a) and 175.3 in that a non-DOT specification pressure vessel is not authorized, except as specified herein.
5. BASIS: This special permit is based on the application of National Aeronautics and Space Administration dated December 21, 2007 submitted in accordance with § 107.105 and the public proceeding thereon.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

<b>Hazardous Materials Description</b>			
<b>Proper Shipping Name</b>	<b>Hazard Class/ Division</b>	<b>Identification Number</b>	<b>Packing Group</b>
Hydrogen, compressed	2.1	UN1049	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification welded pressure vessel constructed of Inconel 718 alloy per AMS 5596 with a minimum thickness of 0.040 inch. The pressure vessel is fabricated from fusion welded tubing and hemispherical domed end caps, designed and constructed in accordance with drawing Lockheed Martin Missiles & Space Company, Inc. drawing 4177758, Rev. G dated 01/30/07, and MIL-STD-1522 with a maximum service pressure of 1200 psig. The pressure vessel is a component of a nickel-hydrogen battery as described in the National Aeronautics and Space Administration (NASA) application on file with the Office of Hazardous Materials Special Permits and Approvals (OHMSPA).

b. TESTING -

(1) 100% of the welds will be examined by non-destructive examination. A cylinder with a flaw greater than 0.050 inches will be rejected.

(2) Each cylinder must have a burst pressure to service pressure ratio of 2.0 or greater.

(3) The nickel-hydrogen battery must meet the requirements of 173.159(d) for a non-spillable, wet electric storage battery. There must be no release of gas during the vibration or pressure differential tests.

(4) The nickel-hydrogen battery must meet the test requirements of the documentation "Qualification Test Procedure - 784" on file with OHMSPA.

(5) Each pressure vessel must be retested and inspected at least once every five years in accordance with the requirements of 180.209(a) with a minimum test pressure of 1,800 psi. The permanent volumetric expansion of the cylinder may not exceed 10% of the total volumetric expansion at test pressure. A pressure vessel leaking or bulging through any weld seam must be rejected.

c. OPERATIONAL CONTROLS -

(1) Pressure relief devices are not required.

(2) Each battery must be protected and transported in a strong outside shipping container as detailed in the NASA application on file with OHMSPA.

(3) Each battery must be shipped in a temperature controlled motor vehicle. The temperature of the motor vehicle must be maintained between 63°F and 70°F during transportation.

8. SPECIAL PROVISIONS:

a. A person who is not a holder of this special permit who receives a package covered by this special permit may reoffer it for transportation provided no modification or change is made to the package or its contents and it is reoffered for transportation in conformance with this special permit and the HMR.

b. A current copy of this special permit must be maintained at each facility where the package is offered or reoffered for transportation.

c. The outside of each shipping container must be marked "Inside package conforms to DOT-SP 14628".

d. Emergency response information must be provided with the shipment and available via an emergency response telephone number must indicate that the cylinders are not fitted with pressure relief devices and provide appropriate guidance for exposure to fire.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle.

10. MODAL REQUIREMENTS: A current copy of this special permit must be carried aboard each motor vehicle used to transport packages covered by this special permit.
11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this special permit and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:
  - o All terms and conditions prescribed in this special permit and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
  - o Persons operating under the terms of this special permit must comply with the security plan requirement in Subpart I of Part 172 of the HMR, when applicable.
  - o Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this special permit must receive training on the requirements and conditions of this special permit in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this special permit, including display of its number, when this special permit has expired or is otherwise no longer in effect.

Under Title VII of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)—"The Hazardous Materials Safety and Security Reauthorization Act of 2005" (Pub. L. 109-59), 119 Stat. 1144 (August 10, 2005), amended the Federal hazardous materials transportation law by changing the term "exemption" to "special permit" and authorizes a special permit to be granted up to two years for new special permits and up to four years for renewals.

12. REPORTING REQUIREMENTS: Shipments or operations conducted under this special permit are subject to the Hazardous Materials Incident Reporting requirements specified in 49 CFR §§ 171.15 - Immediate notice of certain hazardous materials incidents, and 171.16 - Detailed hazardous materials incident reports. In addition, the grantee(s) of this special permit must notify the Associate Administrator for Hazardous Materials Safety, in writing, of any incident involving a package, shipment or operation conducted under terms of this special permit.

Issued in Washington, D.C.:



for Theodore L. Willke  
Associate Administrator for Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Material Safety Administration, U.S. Department of Transportation, East Building PHH-30, 1200 New Jersey Avenue, Southeast, Washington, D.C. 20590.

Copies of this special permit may be obtained by accessing the Hazardous Materials Safety Homepage at [http://hazmat.dot.gov/sp\\_app/special\\_permits/spec\\_perm\\_index.htm](http://hazmat.dot.gov/sp_app/special_permits/spec_perm_index.htm). Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

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