March 26, 2014

U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety Administration**

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

DOT-SP 10427
(FIFTEENTH REVISION)

EXPIRATION DATE: August 31, 2017

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Astrotech Space Operations, Inc.
Titusville, FL

2. PURPOSE AND LIMITATION:

a. This special permit authorizes the transportation in commerce of certain Division 1.1D detonating cord, Division 1.3C rocket motors and Division 1.4C power device cartridges with Division 2.2 compressed gases, Division 2.3 (PIH-Zone A) liquefied gases, Class 3 flammable liquids, Division 6.1 (PIH-Zone A) poisonous liquids, Class 8 corrosive liquids, and Class 9 lithium batteries together in the same motor vehicle, subject to the packaging and special provisions prescribed herein. This special permit provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein. The most recent revision supersedes all previous revisions.

b. The safety analyses performed in development of this special permit only considered the hazards and risks associated with 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 § 173.61(a) in that the shipment of Division 1 explosives in the same outside packaging with other hazardous materials is not authorized, except as specified herein; Subpart F of Part 172 in that placarding other than "DANGEROUS" is waived; § 173.301(g)

with respect to the manifolding restrictions and container valve protection requirements for transportation of compressed or liquefied gases; § 173.302(a) regarding the non-liquefied compressed gas cylinder shipping requirements for nitrogen, helium and argon; § 173.336 regarding the cylinder shipping requirements for dinitrogen tetroxide, liquefied; and § 177.848(d) Table regarding the segregation of hazardous materials in the same vehicle.

5. BASIS: This special permit is based on the application of Astrotech Space Operations, Inc. dated January 30, 2014, submitted in accordance with § 107.105 and the public proceeding thereon.

6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Hazardous Material Description			
Proper Shipping Name	**Hazard Class/ Division**	**Identi-fication Number**	**Packing Group**
Ammonia, anhydrous	2.2	UN1005	N/A
Cartridges, power device	1.4C	UN0276	II
Cord, detonating, *flexible**	1.1D	UN0065	II
Dinitrogen tetroxide, liquefied, (PIH-Zone A)	2.3	UN1067	N/A
Helium, compressed	2.2	UN1046	N/A
Hydrazine, anhydrous	8	UN2029	I
Lithium batteries, contained in equipment	9	UN3091	II
Lithium battery	9	UN3090	II
Methylhydrazine (PIH-Zone A)	6.1	UN1244	I
Nitrogen, compressed	2.2	UN1066	N/A
Rocket motors	1.3C	UN0186	II

Hazardous Material Description			
Proper Shipping Name	**Hazard Class/ Division**	**Identi- fication Number**	**Packing Group**
Xenon	2.2	UN2036	N/A

*Must be shipped spooled and in DOT specification wooden crates in accordance with packaging notes in approval EX2002020290.

7. PACKAGING AND SAFETY CONTROL MEASURES:

a. Packagings prescribed for the "flight-ready" spacecrafts must encapsulate the entire spacecraft and any fixtures, work stands, or flight adaptor structures required to support the spacecraft. Packagings must provide a protective environmental container with continuous low flow rate gaseous nitrogen or conditioned air purging. They must be constructed primarily of aluminum and must be designed to support the structural loading imposed by their own weight and the transport environment, and must meet any hoisting/forklift compatibility requirements.

b. Both packagings and spacecraft must be designed and constructed in accordance with the requirements of NASA document KHB 1700.7, Rev. B entitled "Space Shuttle Payload Ground Safety Handbook" dated Sept. 1, 1992 and USAF document ESMCR 127-1 entitled "Range Safety" dated July 30, 1984, which are on file with Office of Hazardous Materials Safety Approvals and Permits Division (OHMSAPD). No spacecraft covered by this special permit may contain a pressure relief valve in any system which could result in venting of toxic material if actuated. The packagings must be firmly attached to the transport vehicles by either steel chain or machine bolts and must be of three basic types:

(1) Spacecraft-unique containers for spacecraft launched on the Space Shuttle replacements (Falcon, Liberty, etc.), Atlas, LMLV, or Delta launch vehicles. These transport container configurations are approximately 16 feet in width and approximately 20 feet in height installed on the transporter.

(2) NASA GFE transport container/transporter for spacecraft launched on the Boeing DELTA launch vehicle. This transport container configuration is approximately 10 feet in width and up to approximately 25 feet in height installed on the transporter.

(3) Launch vehicle fairing (nose section of the rocket) for spacecraft launched on:

(i) The Lockheed Martin ATLAS launch vehicle - This transport container configuration is approximately 12 feet in width and approximately 43 feet in height installed on the transporter.

(ii) The Lockheed Martin TITAN III launch vehicle - This transport container configuration is approximately 14 feet in width and approximately 49 feet in height installed on the transporter.

(iii) The Lockheed Martin Launch Vehicle (LMLV) - This transport container configuration is approximately 12 feet in width and approximately 34 feet in height installed on the transporter.

(iv) The Boeing DELTA III launch vehicle - This transport container configuration is approximately 13 feet in width and approximately 43 feet in height installed on the transporter.

(v) The Lockheed Martin Atlas V launch vehicle - This transport container configuration is approximately 24 feet in width and approximately 78 feet in height installed on the transporter.

(vi) The Boeing DELTA IV launch vehicle - This transport container configuration is approximately 24 feet in width and approximately 75 feet in height installed on the transporter.

(vii) The Falcon launch vehicle - This transport container configuration is approximately 22 feet in width and approximately 60 feet in height on the transporter.

(viii) Other commercial launch vehicles - This transport container configuration is approximately

24 feet in width and approximately 60 feet in height on the transporter.

c. The "flight-ready" spacecraft may not contain more than the following quantities of hazardous materials:

(1) Helium, compressed, 16 pounds;

(2) Anhydrous hydrazine, 3,200 pounds*;

(3) Methylhydrazine, 2,324 pounds*;

(4) Dinitrogen tetroxide, 3,792 pounds;

(5) Nitrogen, compressed, 16 pounds;

(6) Xenon, 1,200 pounds; and

(7) Anhydrous ammonia, 120 pounds.

* The combined total weight of anhydrous hydrazine and methylhydrazine contained in a single "flight ready" spacecraft transported on any one vehicle may not exceed 3,200 pounds.

d. Each transport operation must be conducted in accordance with the requirements of ESMCR 127-1, Section 5.6.4 entitled "Convoy Operations; e.g. fore and aft escorts must be provided, all convoy elements must be in radio contact with each other throughout the convoy operation, and speed may not exceed 15 mph.

e. Shipments must be made between the Astrotech facilities in Titusville, Florida and the Kennedy Space Center using only the roads specified in the application.

f. The package must be marked "SP 10427" in letters at least two inches high on at least 2 opposite sides on a contrasting background.

g. The transporter may display “DANGEROUS” placards instead of multiple types of placards required in Subpart F of Part 172.

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

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle only.

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:

    - All terms and conditions prescribed in this special permit and the Hazardous Materials Regulations, 49 CFR Parts 171-180.

    - 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.

    - 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 Dr. Magdy El-Sibaie
Associate Administrator for Hazardous Materials Safety

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Pipeline and Hazardous Materials Safety Administration, Department of Transportation, Washington, D.C. 20590. Attention: PHH-31.

Copies of this special permit may be obtained by accessing the Hazardous Materials Safety Homepage at http://hazmat.dot.gov/special permits Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

PO: KFWong/BrMoore