February 21, 2025



Pipeline and Hazardous Materials Safety Administration 1200 New Jersey Avenue, SE Washington, DC 20590

DOT-SP 21546 (FIFTH REVISION)

EXPIRATION DATE: 2025-04-30

(FOR RENEWAL, SEE 49 CFR 107.109)

- 1. <u>GRANTEE</u>: Space Exploration Technologies Corp. Hawthorne, CA
- 2. <u>PURPOSE AND LIMITATIONS</u>:

a. This special permit authorizes the post-recovery transportation in commerce of the Space Exploration Technologies Corp. (SpaceX) Recovered Dragon 2 Capsule (RD2C). 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 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. <u>REGULATORY SYSTEM AFFECTED</u>: 49 CFR Parts 106, 107 and 171-180.
- 4. <u>REGULATIONS FROM WHICH EXEMPTED</u>: 49 CFR §§ 172.300 and 172.400 in that marking and labeling are not required, §§ 172.101(k)(6), the packaging requirements of Part 173 in that non-specification packagings are authorized as described in the special permit, § 176.30 in that the Dangerous Cargo Manifest (DCM) is not required, §§ 176.164(e) in that the fire pump is in the machine space, § 176.190, § 176.200(d) and (f), § 176.600 and § 177.834(h) in that controlled discharge of the material during transportation is authorized.

5. <u>BASIS</u>: This special permit is based on the application of Space Exploration Technologies Corp. dated November 4, 2024, submitted in accordance with § 107.105 and the public proceeding thereon.

Hazardous Material Description			
Proper Shipping Name	Hazard Class/ Division	Identi- fication Number	Packing Group
Articles, explosive, n.o.s. (contains cartridge power device, frangible nut release device)*	1.4S	UN0349	NA
Dinitrogen tetroxide	2.3	UN1067	N/A
Helium, compressed	2.2	UN1046	N/A
Lithium metal batteries contained in equipment <i>including lithium alloy batteries</i>	9	UN3091	N/A
Methylhydrazine	6.1	UN1244	Ι
Oxygen, compressed	2.2	UN1072	N/A
Compressed gas, oxidizing, n.o.s.	2.2	UN3156	N/A
Lithium hydroxide, solution	8	UN2679	II
Nitrogen, compressed	2.2	UN1066	N/A

6. HAZARDOUS MATERIALS (49 CFR 172.101):

*Only articles approved under EX2023042328 are authorized under this permit.

7. <u>SAFETY CONTROL MEASURES</u>:

a. <u>PACKAGING</u>:

(1) The RD2C must be classed as Articles, explosive, n.o.s. (contains cartridge power device, frangible nut release device), UN0349, 1.4S, in accordance with the requirements of EX2023042328 prior to transport under this special permit. As required by EX2023042328, engine throat plugs must be installed prior to transport to preclude any leaking or mixing of hypergolic fluids from the RD2C.

(2) The RD2C may be transported unpackaged when secured as indicated in the application on file with the Office of Hazardous Materials Safety (OHMS) while on the SpaceX recovery vessels, M/V MEGAN (O.N. 1226876) and M/V SHANNON (O.N. 1221524), or on a specially designed flatbed trailer when being transported from Port Canaveral to Area 59, Cape Canaveral Space Force Station, FL. The RD2C capsule will be secured in a specially designed fixture during transportation.

(3) Prescribed packagings within the RD2C are non-DOT specification and lithium batteries contained in equipment packagings which are part of a SpaceX RD2C. Design of the RD2C and internal packagings must be as described in the application on file with the Office of Hazardous Materials Safety (OHMS) and as previously authorized for transportation under DOT-SP 20474.

(4) Packaging for UN3156 are non-DOT specification cylinders that are part of the International Space Station Human Research Facility Gas Delivery System as authorized in DOT-SP 14814.

b. <u>OPERATIONAL CONTROLS</u>:

(1) Vessel transportation of the RD2C is only authorized from a designated splashdown location to an authorized offloading location onboard the M/V MEGAN (O.N. 1226876) and M/V SHANNON (O.N. 1221524) under the terms of this special permit.

(2) Advanced Notice to the United States Coast Guard (USCG) Officer in Charge, Marine Inspection (OCMI) or the Captain of the Port (COTP). SpaceX must notify the USCG at least 72 hours in advance of plans to operate under the special permit unless prior arrangements have been made with the USCG. The notification must include the point of departure, destination(s), and an unloading and departure schedule. If a schedule deviates more than four hours from the originally scheduled departure time, SpaceX must immediately notify the USCG. Alternative notification procedures may be established subject to the written approval of the USCG.

(3) Prior to entering the port area SpaceX must provide notification to the OCMI or COTP that the rocket motors have been secured and/or of any offnominal conditions.

(4) Vessels operating under this special permit must have an active fire suppression system that can fully encompass the RD2C.

(5) Vessels operating under this special permit must have an automated audible/visual alert and alarm system to detect leaks of methylhydrazine (MMH)

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and/or dinitrogen tetroxide (NTO) that has been approved for use by the USCG.

(6) The SpaceX vessel used to transport the RD2C capsule must meet all applicable part 46 CFR Subchapter I requirements for fire protection, firefighting, and lifesaving and have valid 5-year Certificates of Inspections from the USCG.

(7) No cargo other than the RD2C capsule is authorized on the vessel during transportation under this special permit. Oxygen cylinders may be present as ship's stores in the medical/cargo space in accordance with 46 CFR Part 147.

(8) Vessels operating under this permit must have multiple means of egress while the RD2C is onboard and during all RD2C capsule off-loading operations. This may include a double gangway or having an escape vessel present during offloading.

(9) Authorized persons aboard vessel: No person other than a required crewmember, a required SpaceX employee, a returning astronaut or other person essential to the operations may be onboard the vessel. All people onboard the vessel must be fully trained and briefed about the Emergency Response Procedures required during operations. The maximum number of personnel authorized on the vessel will be determined in accordance with 46 CFR 92.20 or other applicable USCG determination.

(10) While the RD2C is on board the vessel, personnel must remain as far as is practicable away from the RD2C. The area immediately near the RD2C capsule and aft of the vessel house on the SpaceX vessels must be minimally occupied once the RD2C is in its final stowed position. The medical/cargo space must only be occupied in order to provide medical/cargo services in that space by personnel required to provide or receive those services while the RD2C is on board the vessel. Emergency escape breathing devices must be present in the medical/cargo space for those providing/receiving services.

(11) Post splash down recovery of the RD2C capsule and loading onto the MEGAN or SHANNON and transportation to the port must be performed in accordance with *SpaceX Procedures, Dragon 2 Capsule Recovery and Post-Recovery Vessel Transit to Port* as described in the application on file with the OHMS.

(12) Once on board the vessel, the RD2C capsule must be handled and monitored in accordance with *SpaceX Procedure*, *Dragon 2 Capsule Post-Recovery Processing* as described in the application on file with the OHMS to ensure that the methylhydrazine and/or dinitrogen tetroxide is not leaking, or other hazards do not exist.

(13) If leakage of the hypergolic propellants is detected, emergency operations must be conducted in accordance with *SpaceX Procedure, Contingency: Hypergolics* as described in the application on file with the OHMS. Response to other contingency scenarios must be conducted in accordance with *SpaceX Procedure, Contingency: Various Dragon 2 capsule* to ensure personnel and operational safety. Personnel onboard the vessel, must follow the instructions of the Master at all times during emergency operations.

(14) Transportation of the RD2C capsule from Port Canaveral, FL, to Area 59, Cape Canaveral Space Force Station, FL, from the Port of Long Beach, CA to Area 59, Cape Canaveral Space Force Station, FL, or from the Port of Long Beach, CA, to Hawthorn, CA, must be by motor vehicle operated by SpaceX in accordance with *Engineering Master, EM 410914, Cape Dragon 2 Dock-To-Maintenance* and Work Orders that are customized for each launch and recovery.

(15) Offloading of the RD2C must not coincide with any passenger or cargo vessel operations in, or around, the channel of the Port of Canaveral and/or the middle turning basin.

(16) During offloading operations, the requirements of 49 CFR 176.164(b) must be met, and a fire team must be on board the vessel with laid out and charged hoses.

(17) Motor vehicle transportation of the RD2C will be by motor vehicle as authorized under DOT-SP 20474. The motor vehicle may be either operated by SpaceX or by a contract motor carrier in exclusive use of SpaceX. In either case the carrier must possess a Federal Motor Carrier Safety rating of "Satisfactory" and a Hazardous Materials Safety Permit, if required by the regulations for the type and quantity of hazardous materials being transported.

(18) During motor vehicle transportation the RD2C will be continuously monitored by SPM Flex and handheld Draeger devices for NTO/MMH releases.

(19) Motor vehicle transportation of the RD2C will be by the shortest route practicable while avoiding highly populated areas. The motor vehicle will be escorted at all times.

(21) Except for the cylinder(s) addressed below, no cargo other than the RD2C is authorized on the motor vehicle during transportation under this special permit. The RD2C may be attached to an authorized cylinder(s) of nitrogen that is transported with the valve open to continuously purge the RD2C.

(22) Two qualified and trained drivers must transport the RD2C capsule. The motor vehicle must be attended at all times by a driver. Drivers must be trained in the dangers of the hazardous materials and measures to be taken in the event of an accident or emergency.

(23) Vehicles and/or vessels are not authorized to transit within the Space Force exclusion area during off-loading of the RD2C capsule.

8. <u>SPECIAL PROVISIONS</u>:

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

b. The RD2C transport fixture must be marked "DOT-SP 21546" on two opposite sides in letters at least 2 inches in height on the contrasting background. The packages contained within the RD2C are not required to be marked or labeled.

c. Personnel directly interacting with the RD2C must be HAZMAT trained as required by the HMR.

d. If the SpaceX Procedures indicated in this special permit are revised, the updated procedures must be provided to the OHMS and the USCG prior to use.

9. <u>MODES OF TRANSPORTATION AUTHORIZED</u>: Motor vehicle and cargo vessel.

- 10. <u>MODAL REQUIREMENTS</u>: A current copy of this special permit must be carried aboard each cargo vessel or motor vehicle used to transport packages covered by this special permit.
- 11. <u>COMPLIANCE</u>: 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 <u>et seq</u>:
 - 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 <u>et seq</u>., 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. <u>REPORTING REQUIREMENTS</u>: 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.:

William Selan

William Schoonover 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-13, 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 <u>https://www.phmsa.dot.gov/approvals-and-permits/hazmat/special-permits-search</u>. Photo reproductions and legible reductions of this special permit are permitted. Any alteration of this special permit is prohibited.

PO: AD/AS