

**NATIONAL TRANSPORTATION SAFETY BOARD**

Office of Aviation Safety  
Washington, D.C. 20594

March 09, 2015

**Attachment 3 – FAA letter to Scaled, dated May 23, 2012**

**SYSTEM SAFETY**

**DCA15MA019**



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

Office of the Associate Administrator for  
Commercial Space Transportation

800 Independence Ave., SW.  
Washington, DC 20591

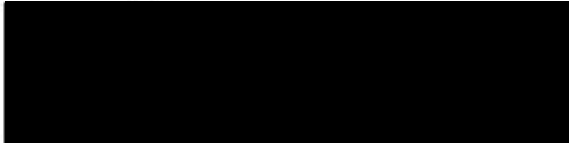
May 23, 2012

Mr. Douglas B. Shane  
President  
Scaled Composites, LLC  
1624 Flight Line  
Mojave, CA 93501-1663

Dear Mr. Shane:

I am pleased to issue you an experimental permit, EP 12-007, and accompanying permit orders authorizing Scaled Composites, LLC (Scaled) to conduct launches of SpaceShipTwo utilizing the WhiteKnightTwo carrier aircraft through May 22, 2013. Each nominal launch is to commence and conclude at Mojave Air and Space Port.

Sincerely,



Kenneth Wong  
Manager  
Licensing and Evaluation Division

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# Commercial Space Transportation Experimental Permit

Experimental Permit Number: EP 12-007

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Scaled Composites,  
LLC

**is authorized, subject to the provisions of 51 USC Subtitle V, ch. 509, and the orders, rules, and regulations issued under it, to conduct launches.**

General. The permittee is authorized to conduct:

- (1) An unlimited number of launches of SpaceShipTwo utilizing WhiteKnightTwo within the operating area identified by permit order A; and
- (2) Pre-flight and post-flight ground operations at Mojave Air and Space Port associated with permitted flights of SpaceShipTwo utilizing WhiteKnightTwo.

**This permit is granted subject to the terms, conditions, and limitations set forth in permit orders A and B, and any subsequent orders issued by the Office of Commercial Space Transportation.**

**The permittee shall at all times conduct its operations in accordance with the regulations prescribed by the Office of Commercial Space Transportation for the activities authorized by this experimental permit.**

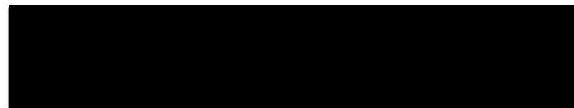


US Department  
of Transportation  
Federal Aviation  
Administration

800 Independence Ave., S.W.  
Washington, D.C. 20591

Issued On: May 23, 2012

Effective On: May 23, 2012



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Manager, Licensing and Evaluation Division

**Experimental Permit Order No. EP 12-007A**

OFFICE OF COMMERCIAL SPACE TRANSPORTATION  
EXPERIMENTAL PERMIT ORDER REGARDING

**REUSABLE SUBORBITAL ROCKET LAUNCHES**

Under Experimental Permit No. EP 12-007  
Issued to

SCALED COMPOSITES, LLC

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1. Authority: This Order is issued to Scaled Composites, LLC (Scaled) under 51 U.S.C. Subtitle V, Chapter 509 and 14 C.F.R Ch. III.
2. Purpose: This Order modifies Experimental Permit No. EP 12-007 (the Permit) issued concurrently by the Federal Aviation Administration's Office of Commercial Space Transportation (Office), authorizing Scaled to conduct launches of the SpaceShipTwo (SS2) reusable suborbital rocket utilizing the WhiteKnightTwo (WK2) carrier aircraft. This Order prescribes definitions and conditions applicable to each launch conducted by Scaled under the Permit.
3. Definitions: For purposes of the Permit and any orders issued by the Office modifying the Permit, the following definitions apply:
  - (a) "Pre-flight ground operations" begin with pressurizing and ground-enabling SS2's propulsion system by inserting a propulsion Insert Before Flight Device as identified in the Permit application.
  - (b) "Flight" means the flight of SS2 commencing upon take-off of WK2 from Mojave Air and Space Port with the intent to launch SS2. For SS2 and WK2 flight ends upon wheels stopping after landing.
  - (c) "Post-flight operations" begin when SS2's wheels stop after landing and end after Scaled returns the vehicle to a safe condition.

**Experimental Permit Order No. EP 12-007A**

4. Safety Clear Zone:

- (a) During pressurizing and ground-enabling of the SS2 propulsion system, Scaled must establish a 1250 foot radius safety clear zone.
- (b) During post-flight operations, Scaled must establish a 500 foot radius safety clear zone around SS2 in the runway area until Scaled verifies that no hazard exists. If a hazard exists, Scaled must move SS2 to a Mojave Air and Space Port Mission Preparation Area, as identified in the East Kern Airport District launch site operator license application, or establish a safety clear zone as identified in Scaled's Permit application.

5. Vehicle Inspection:

Scaled must make the SS2 available for a vehicle inspection of the propulsion system as depicted in the Permit application prior to first powered flight.

6. Operating Area:

The operating area is R-2508 Complex, which is restricted airspace described in a Letter of Agreement among Scaled, the R-2508 Complex Control Board, and the Air Force Flight Test Center.

7. Key Flight Safety Events:

Scaled must submit to the FAA the locations of specific population zones that will be avoided during the key flight safety events of each SS2 mission. The FAA must approve the proposal before flight.

8. Hazard Analysis:

Scaled must submit an updated hazard analysis showing that all identified hazards have been mitigated to Scaled's acceptability criteria, including the Rocket Motor Controller and the Misleading Trajectory Guidance at Boost hazards. The FAA must approve this analysis before flight.

**Experimental Permit Order No. EP 12-007A**

9. Allowable Design Changes:

In accordance with 14 C.F.R § 437.85(a), Scaled may make the following design changes to SS2 without invalidating the Permit provided that Scaled does not alter its demonstration of compliance with 14 C.F.R §§ 437.55, 437.57, 437.59, and 437.61. Scaled may:

- (1) Change sensor types, ranges, or sensor locations.
- (2) Change pressures in bottles or actuators within the design limits of those devices.
- (3) Tune control system components as indicated by flight test.
- (4) Change the quantity, composition, and location of thermal protection.
- (5) Change window heating system design and implementation.
- (6) Change electrical actuator type or location.

10. Compliance With Aviation Requirements:

During launch operations WK2 must hold a valid experimental airworthiness certificate and must operate in accordance with the operating limitations of that certificate and the applicable sections of 14 C.F.R. part 91.

11. The control tower at the Mojave Air and Space Port must be in operation and Class D airspace in effect during launch.

12. Responsibility and Authority of SS2 Pilot In Command:

- a. Prior to flight, Scaled must designate the pilot in command of the SS2 vehicle who is directly responsible for, and is the final authority as to, the operation of that vehicle.
- b. In an in-flight emergency requiring immediate action, the pilot in command may deviate from any requirement of this Permit and Order to the extent required to meet that emergency.
- c. Each pilot in command who deviates from a requirement of this Permit must, upon request, send a written report of that deviation to the FAA's Licensing and Evaluation Division Manager.

**Experimental Permit Order No. EP 12-007A**

13. Permit Term: The term of the Permit is one year from the effective date of the Permit.

OFFICE OF COMMERCIAL SPACE TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

By: \_\_\_\_\_

  
Kenneth Wong, Manager  
Licensing and Evaluation Division

Issued: May 23, 2012

Effective: May 23, 2012

**Experimental Permit Order No. EP 12-007B**

OFFICE OF COMMERCIAL SPACE TRANSPORTATION  
EXPERIMENTAL PERMIT ORDER REGARDING

**FINANCIAL RESPONSIBILITY REQUIREMENTS**

Under Experimental Permit No. EP 12-007  
Issued to

SCALED COMPOSITES, LLC

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1. Authority: This Order is issued to Scaled Composites, LLC (Scaled) under 51 U.S.C. Subtitle V, Chapter 509 and 14 C.F.R. part 440.
2. Purpose: This Order modifies Experimental Permit No. EP 12-007 (the Permit) issued concurrently by the Federal Aviation Administration's Office of Commercial Space Transportation, by prescribing financial responsibility requirements for permitted activities in accordance with 14 C.F.R. part 440.
3. Definitions: For the purposes of this order, "permitted launch activities" means activities authorized by the Permit. Other terms used in this Order are defined in accordance with 14 C.F.R. § 440.3.
4. Liability Insurance: For each launch of SpaceShipTwo utilizing WhiteKnightTwo, Scaled must maintain liability insurance (or otherwise demonstrate financial responsibility) in accordance with 14 C.F.R. § 440.9(b). The liability insurance policy or policies must provide at least \$9,000,000 for covered claims resulting from permitted activities commencing from Mojave Air and Space Port as described in Experimental Permit Order No. EP 12-007A.



**Experimental Permit Order No. EP 12-007B**

OFFICE OF COMMERCIAL SPACE TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

By:

  
Kenneth Wong, Manager  
Licensing and Evaluation Division

Issued: May 23, 2012

Effective: May 23, 2012