



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

March 10, 2015

Attachment 25 – FAA Responses

OPERATIONAL FACTORS

DCA15MA019



Federal Aviation Administration

Memorandum

Date: February 12, 2015

From: Manager, Accident Investigation Division, AVP-100

To: Office of Commercial Space Transportation – Safety Inspection Division, AST-400

ACTION: National Transportation Safety Board (NTSB) Information Request
15.128

Event: Scaled Composites SpaceShipTwo accident (DCA15MA019)

DESCRIPTION OF SUPPORT REQUESTED

- Request answers to the following:
 1. What pilot certificates (including ratings and limitations) must the pilot and co-pilot of WhiteKnight2 and SpaceShip2 hold during:
 - a. Glide flights only
 - b. Boost flights
 2. What rules are WhiteKnight2 and SpaceShip2 operating under (ie. Part 91) during boost and/or glide flights? Are they operating under this part or only required to comply with that part?
 3. Are pilots of WhiteKnight2 and SpaceShip2 required to comply with 14 CFR 61.58 and 61.55 for boost and/or glide flights?

The above request has been received from the NTSB. Your support in providing the data is greatly appreciated within 15 days or as soon as possible. If this request requires review through AGC and additional time is needed please notify me.

Thank you,

// Roberta Toth //

Phone: 202-267-3120

AVP-100 Division Manager Signature: // Jeff Guzzetti //

NTSB Action 15.128: Request for answers to the following questions:

NTSB Question 1. What pilot certificates (including ratings and limitations) must the pilot and co-pilot of WhiteKnight2 and SpaceShip2 hold during:

- a. **Glide flights only**
- b. **Boost flights**

FAA Answer 1a (glide flight test):

During glide flight tests where WK2 and SS2 are operating as aircraft with individual experimental airworthiness certificates under 14 CFR part 91 General Operating and Flight Rules, pilot certificate requirements are as prescribed in 14 CFR part 61 and 91.

FAA Answer 1b (rocket-powered flight test, including boost):

During rocket-powered flight tests where WK2 and SS2 are operating as a launch system under an experimental permit, pilot requirements, which include an FAA pilot certificate with an instrument rating, are prescribed by AST in 14 CFR § 460.5 Crew Qualifications and Training. Rocket-powered flights under an AST experimental permit includes the WK2/SS2 take off, WK2/SS2 captive carry, WK2/SS2 air launch, SS2 boost, SS2 apogee, SS2 reentry, SS2 glide, and WK2 and SS2 landings.

14 CFR § 460.5 Crew qualifications and training.

(a) Each crew member must—

(1) Complete training on how to carry out his or her role on board or on the ground so that the vehicle will not harm the public; and

(2) Train for his or her role in nominal and non-nominal conditions. The conditions must include—

(i) Abort scenarios; and

(ii) Emergency operations.

(b) Each member of a flight crew must demonstrate an ability to withstand the stresses of space flight, which may include high acceleration or deceleration, microgravity, and vibration, in sufficient condition to safely carry out his or her duties so that the vehicle will not harm the public.

(c) A pilot and a remote operator must—

(1) Possess and carry an FAA pilot certificate with an instrument rating.

(2) Possess aeronautical knowledge, experience, and skills necessary to pilot and control the launch or reentry vehicle that will operate in the National Airspace System (NAS). Aeronautical experience may include hours in flight, ratings, and training.

(3) Receive vehicle and mission-specific training for each phase of flight by using one or more of the following—

(i) A method or device that simulates the flight;

(ii) An aircraft whose characteristics are similar to the vehicle or that has similar phases of flight to the vehicle ;

(iii) Flight testing; or

(iv) An equivalent method of training approved by the FAA through the license or permit process.

(4) Train in procedures that direct the vehicle away from the public in the event the flight crew abandons the vehicle during flight; and

(5) Train for each mode of control or propulsion, including any transition between modes, such that the pilot or remote operator is able to control the vehicle.

(d) A remote operator may demonstrate an equivalent level of safety to paragraph (c)(1) of this section through the license or permit process.

(e) Each crew member with a safety-critical role must possess and carry an FAA second-class airman medical certificate issued in accordance with 14 CFR part 67, no more than 12 months prior to the month of launch and reentry.

NTSB Question 2. What rules are WhiteKnight2 and SpaceShip2 operating under (i.e. Part 91) during boost and/or glide flights? Are they operating under this part or only required to comply with that part?

FAA Answer 2a (glide flight test):

During glide flight tests, WK2 and SS2 are operating as prescribed by AVS as aircraft with individual experimental airworthiness certificates under 14 CFR part 91 General Operating and Flight Rules.

FAA Answer 2b (rocket-powered flight test including boost):

During rocket-powered flight tests where WK2 and SS2 are operating as a launch system under an experimental permit, operational requirements are as prescribed by AST in Scaled Composites' Experimental Permit:

Experimental Permit AST EP-12-007A Terms and Condition #8:

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

Although the AST experimental permit requires a valid experimental airworthiness certificate, the experimental airworthiness certificates are held in abeyance during the rocket-powered flight tests (AVS does not exercise compliance monitoring during AST activity).

NTSB Question 3. Are pilots of WhiteKnight2 and SpaceShip2 required to comply with 14 CFR 61.58 and 61.55 for boost and/or glide flights?

FAA Answer 3a (glide flight test):

During glide flight tests where WK2 and SS2 are operating as prescribed by AVS as aircraft with individual experimental airworthiness certificates under 14 CFR part 91:

- WK2 pilots are required to comply with *both* 14 CFR § 61.55 and § 61.58
- SS2 pilots are required to comply with *neither* 14 CFR § 61.55 nor § 61.58

FAA Answer 3b (rocket-powered flight test including boost):

During rocket-powered flight tests where WK2 and SS2 are operating as a launch system under an AST experimental permit, *both* WK2 and SS2 pilots are required to comply with 14 CFR § 460.7 Operator Training of Crew (14 CFR § 61.55 and § 61.58 are not applicable).