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

**Office of the Chief Counsel**

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

December 10, 2019

Laura Montgomery
Ground Based Space Matters, LLC
11013 Fawsett Road
Potomac, MD 20854

Dear Ms. Montgomery:

This letter responds to your March 8, 2019 request by email for an interpretation, on behalf of Virgin Galactic, LLC (VG), that vacates the July 23, 2018 memorandum to Kelvin B. Coleman from Lorelei Peter (July 23 Memorandum).[1] Specifically, you ask that the FAA consider WhiteKnightTwo (WK2) flight training maneuvers that mirror the return of its SpaceShipTwo (SS2) rocket as part of launch and therefore regulated under 51 U.S.C. chapter 509 (Title 51). You state that because WK2 constitutes the first stage of VG's launch system, the FAA should treat WK2's post-separation training activities that duplicate its own end-of-launch activities as part of launch. Additionally, you suggest that as WK2's activities are limited by the fuel it carries, this limitation could serve as a bright line test to bound the applicability of a favorable interpretation. Finally, you point out that the FAA is statutorily required to regulate only to the extent necessary under Title 51. The FAA has considered your request and does not find compelling information that warrants reconsideration of its previous conclusion that WK2's post-separation training activities are conducted appropriately under Title 49 and are not launch activity under Title 51. Therefore, we decline to vacate the July 23 Memorandum.

In the July 23 Memorandum, the FAA determined that certain additional flight activities that VG wished to conduct after WK2's first opportunity to land, including touch/go and additional landings and takeoffs, do not constitute launch activities and therefore must be conducted under title 49 of the United States Code, rather than Title 51. The FAA found that these activities do not have a causal nexus to launch and therefore are not appropriately regulated under Title 51. Additionally, the FAA stated that it would be an inappropriate expansion of its authority under Title 51 to include such activities that occur after WK2 could have landed and been returned to a safe condition. The FAA maintains that the proposed training activities that WK2 would conduct after its first opportunity to land are aviation activities and not activities unique to spaceflight.

However, we do conclude that launch ends once WK2 impacts Earth; which allows WK2 to transition to Title 49 activity without coming to a complete stop provided the operation is conducted in accordance with the operating limitations of its experimental certificate.

---

[1] Memorandum to Kelvin B. Coleman from Lorelei Peter, Assistant Chief Counsel for Regulations (July 23, 2018).

Title 51 defines launch as "...to place or try to place a launch vehicle or reentry vehicle and any payload or human being from Earth...in a suborbital trajectory...including activities involved in the preparation of a launch vehicle or payload for launch, when those activities take place at a launch site in the United States."[2] Because the proposed post-separation training activities do not meet the definition of launch, as discussed in the July 23 Memorandum,[3] WK2 must conduct these activities under Title 49 and pursuant to its experimental certificate. As you state in your request, WK2 holds a valid experimental airworthiness certificate and is subject to FAA's aviation regulations when not operating as the first stage of a launch. In its 2013 legal interpretation to Pamela Meredith, the FAA stated: "[t]he combination launch system [WK2 and SS2] satisfies a different definition of a launch vehicle because it has a suborbital rocket as a component. Chapter 509 applies when the system operates as a launch vehicle from the flight of the carrier aircraft, through ignition of the rocket, to the return and landing of the carrier aircraft and the suborbital rocket. For a mission that does not entail ignition of the rocket, the FAA's aviation statue and regulations apply."[4] The FAA's aviation statute and regulations apply for a mission that does not plan to launch a rocket into space.

The end of launch for a suborbital reusable launch vehicle is defined, in relevant part, as "after vehicle landing or impact on Earth, and after activities necessary to return the vehicle to a safe condition on the ground."[5] For the SS2 and WK2 combination launch system, launch ends after each component in the system has met the regulatory end of launch definition. Therefore, both components (SS2 and WK2) must land or impact Earth and be returned to a safe condition on the ground.

According to VG, SS2 is the first component of the launch system to land. After SS2 stops on the runway, the SS2 pilots initiate the power shut down checklist procedure and final system venting. Until these procedures are completed, the VG ground crew personnel must remain 500 feet clear of the vehicle. Within approximately fifteen to twenty minutes, assuming a nominal operation, SS2 is cleared for personnel to approach and is then towed off the runway. After SS2 is clear of the runway, WK2 touches down on the same runway. VG proposes that WK2 would touch down and then proceed with touch and go maneuvers without coming to a complete stop and undergoing safing procedures.

The FAA finds that, after WK2 impacts Earth,[6] launch has ended for the SS2 and WK2 launch system because at the point WK2 impacts the Earth SS2 has already landed been safed, and WK2 does not require any further action to return the vehicle to a safe

---

[2] 51 U.S.C. 50902.

[3] Memorandum to Kelvin B. Coleman from Lorelei Peter, Assistant Chief Counsel for Regulations (July 23, 2018).

[4] Legal Interpretation to Pamela Meredith from Mark W. Bury, Assistant Chief Counsel for International Law, Legislation and Regulations (Sept. 26, 2013).

[5] 14 CFR 401.5.

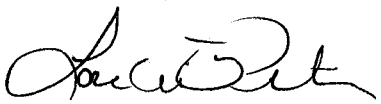
[6] Once SS2 separates from WK2 launch pylons, WK2 no longer shares interphase systems, such as pneumatic and electrical, with SS2. WK2 after SS2 separation operates like any other jet aircraft with jet A fuel and an experimental certificate. Therefore, for nominal flight and landing, WK2 is in a safe condition when it impacts earth. Any additional unique safe conditions are not warranted.

condition on the ground. As both components have met the definition of end of launch, activity under Title 51 has ended and the continued operations of WK2 is under the authority in Title 49.

It is noted that operations described above must be conducted in accordance with the applicable operating limitations of the experimental certificate and the terms of the launch license. If the FAA finds during the license review that safing procedures are appropriate for WK2 under other circumstances, the end of launch for WK2 would not occur when WK2 impacts with Earth but rather upon the completion of the safing activities. VG should work with the appropriate FAA offices with respect to any operational limitations necessary to comply with its experimental certificate and conduct the Title 49 activities in accordance with the appropriate FAA regulations, including part 91 and any needed deviations or exemptions.

We appreciate your patience and trust that the above responds to your concerns. If you need further assistance, please contact my staff at (202) 267-3073. This letter has been prepared by Sabrina Jawed, Airman Certification, Air Traffic and Commercial Space Law Branch, Office of the Chief Counsel and coordinated with the Office of Commercial Space Transportation, and the office of Aviation Safety.

Sincerely,



Lorelei Peter
Assistant Chief Counsel for Regulations, AGC-200