



## FAA Commercial Space Transportation

# Ground Safety Approach for FAA Licensed International Launch or Reentry Activity

### Introduction

The Commercial Space Launch Act of 1984, as amended and codified at 51 U.S.C. 50901–50923 (the Act), authorizes the Secretary of Transportation to oversee, license, and regulate commercial launch and reentry activities, and the operation of launch and reentry sites within the United States or as carried out by U.S. citizens. The Secretary of Transportation’s licensing and regulatory authority for commercial space transportation is delegated to the Administrator of the Federal Aviation Administration (FAA). Although the FAA issues launch licenses for launches from non-U.S. launch sites if the operator is a citizen of the U.S., the FAA considers it outside its authority to license preflight activities that take place at a non-U.S. launch site in light of the statutory definition of launch that explicitly refers to “activities involved in the preparation of a launch vehicle . . . when those activities take place at a launch site in the United States.” 51 U.S.C. 50902(7). For non-U.S. launch sites, the FAA licenses launches beginning at ignition, or if there is no ignition, then at the first movement that initiates flight. 14 CFR 450.3(b)(2). Under the current regulations, certain operators may also operate under parts 415, 417, 431, and 435 for up to five years after the effective date of the Streamlined Launch and Reentry License Requirements final rule. For these operators and during this time period, 14 CFR 401.5 defines beginning of launch. For operations at non-U.S. launch sites, section 401.5 is silent as to when launch begins. The FAA has historically licensed launches beginning at ignition, or if there is no ignition, then at the first movement that initiates flight, as reflected in section 450.3(b)(2). Therefore, the FAA would apply the same framework to both licenses issued under Part 450 and licenses issued under parts 415, 417, 431 and 435.

Due to the aforementioned restrictions on the applicability of the regulations for non-U.S. launches, the FAA does not oversee many details of ground safety in the time period leading up to ignition. There are several important functions that can only be inspected before first motion<sup>1</sup> so the FAA may conduct certain pre-flight checks after license issuance to protect public safety during the flight of the vehicle.

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<sup>1</sup> “For [...] non-U.S. launch sites, the FAA has historically licensed launches beginning at ignition, or if there is no ignition, then at the first movement that initiates flight.” *Streamlined Launch and Reentry Licensing Requirements*, NPRM, 84 FR 15296, 15360 (Apr. 15, 2019).

## **Applicable Regulations**

Even though ground safety regulations are not applicable at non-U.S. launch sites, the following pre-flight processing sections related to public safety and in-flight safety may be monitored on the ground by the FAA at all launch sites. Please keep in mind that this is a representative but non-exhaustive description of the FAA's ground safety regulations:

1. Launch safety rules (14 CFR § 450.151, 450.159 and 450.165)

Surveillance, monitoring of meteorological conditions, flight safety system safing and launch crew work shift and rest rules have pre-flight ground operation elements that are not exempt from FAA oversight. Additionally, safety critical preflight operations must be identified in advance and are required to have FAA oversight.

2. Tests (14 CFR § 450.145 and 450.177)

While ground system tests that are part of this section would be exempt, traditional flight safety system testing has ground based command control system and support system testing that may be inspected by the FAA. There may be additional verification of other safety critical systems that will be inspected by the FAA.

3. Readiness (14 CFR § 450.155)

A number of pre-flight review and rehearsals are required in this section. These include the review of personnel qualification (§ 450.149 Safety critical personnel qualifications and certification) and pre-launch rehearsals that need to be performed including a countdown rehearsal, emergency response rehearsal, and a communications rehearsal, with at least one simulated abnormal preflight condition that would impact public safety.

4. Safety Critical-System Design, Test and Documentation (14 CFR § 450.143)

The ground segment of the flight safety system and command control system requirements are still required to meet the requirements in these sections, including some pre-flight checks.