

## **PRA Related Regulatory Sections for Part 437**

### 14 CFR Part 413 – License and Experimental Permit Application Procedures

#### **§ 413.23 License or permit renewal.**

(a) Eligibility. A licensee or permittee may apply to renew its license or permit by submitting to the FAA a written application for renewal at least 90 days before the license expires or at least 60 days before the permit expires.

(b) Application. (1) A license or permit renewal application must satisfy the requirements set forth in this part and any other applicable part of this chapter.

(2) The application may incorporate by reference information provided as part of the application for the expiring license or permit, including any modifications to the license or permit.

(3) An applicant must describe any proposed changes in its conduct of licensed or permitted activities and provide any additional clarifying information required by the FAA.

(c) Review of application. The FAA reviews the application to determine whether to renew the license or permit for an additional term. The FAA may incorporate by reference any findings that are part of the record for the expiring license or permit.

(d) Renewal of license or permit. After the FAA finishes its reviews, the FAA issues an order modifying the expiration date of the license or permit. The FAA may impose additional or revised terms and conditions necessary to protect public health and safety and the safety of property and to protect U.S. national security and foreign policy interests.

(e) Denial of license or permit renewal. The FAA informs a licensee or permittee, in writing, if the FAA denies the application for renewal and states the reasons for denial. If the FAA denies an application, the licensee or permittee may follow the procedures of § 413.21 of this part.

14 CFR Part 437 – Experimental Permits

**Subpart B – Requirements to Obtain an Experimental Permit**

**§ 437.21 General.**

To obtain an experimental permit an applicant must make the demonstrations and provide the information required by this section.

(a) This subpart. An applicant must provide a program description, a flight test plan, and operational safety documentation as required by this subpart.

(b) Other regulations. (1) Environmental. An applicant must provide enough information for the FAA to analyze the environmental impacts associated with proposed reusable suborbital rocket launches or reentries. The information provided by an applicant must be sufficient to enable the FAA to comply with the requirements of the National Environmental Policy Act, 42 U.S.C. 4321 et seq., and the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, 40 CFR parts 1500–1508.

(2) Financial responsibility. An applicant must provide the information required by part 3 of appendix A of part 440 for the FAA to conduct a maximum probable loss analysis.

(3) Human space flight. An applicant proposing launch or reentry with flight crew or a space flight participant on board a reusable suborbital rocket must demonstrate compliance with §§ 460.5, 460.7, 460.11, 460.13, 460.15, 460.17, 460.51 and 460.53 of this subchapter.

(c) Use of a safety approval. If an applicant proposes to use any reusable suborbital rocket, safety system, process, service, or personnel for which the FAA has

issued a safety approval under part 414 of this subchapter, the FAA will not reevaluate that safety element to the extent its use is within its approved envelope. As part of the application process, the FAA will evaluate the integration of that safety element into vehicle systems or operations.

(d) Inspection before issuing a permit. Before the FAA issues an experimental permit, an applicant must make each reusable suborbital rocket planned to be flown available to the FAA for inspection. The FAA will determine whether each reusable suborbital rocket is built as represented in the application.

(e) Other requirements. The FAA may require additional analyses, information, or agreements if necessary to protect public health and safety, safety of property, and national security and foreign policy interests of the United States.

**§ 437.25 Flight test plan.**

An applicant must –

(a) Describe any flight test program, including estimated number of flights and key flight-safety events.

(b) Identify and describe the geographic coordinates of the boundaries of one or more proposed operating areas where it plans to perform its flights and that satisfy § 437.57(b) of subpart C. The FAA may designate one or more exclusion areas in accordance with § 437.57(c) of subpart C.

(c) For each operating area, provide the planned maximum altitude of the reusable suborbital rocket.

**§ 437.27 Pre-flight and post-flight operations.**

An applicant must demonstrate how it will meet the requirements of § 437.53(a) and (b) to establish a safety clear zone and verify that the public is outside that zone before and during any hazardous operation.

**§ 437.29 Hazard analysis.**

(a) An applicant must perform a hazard analysis that complies with § 437.55(a).

(b) An applicant must provide to the FAA all the results of each step of the hazard analysis required by paragraph (a) of this section.

**§ 437.31 Verification of operating area containment and key flight-safety event limitations.**

(a) An applicant must identify, describe, and provide verification evidence of the methods and systems used to meet the requirement of § 437.57(a) to contain its reusable suborbital rocket's instantaneous impact point within an operating area and outside any exclusion area. The description must include, at a minimum —

(1) Proof of physical limits on the ability of the reusable suborbital rocket to leave the operating area; or

(2) Abort procedures and other safety measures derived from a system safety engineering process.

(b) An applicant must identify, describe, and provide verification evidence of the methods and systems used to meet the requirements of § 437.59 to conduct any key flight-safety event so that the reusable suborbital rocket's instantaneous impact point, including its expected dispersions, is over unpopulated or sparsely populated areas, and to

conduct each reusable suborbital rocket flight so that the reentry impact point does not loiter over a populated area.

**§ 437.37 Tracking.**

An applicant must identify and describe each method or system used to meet the tracking requirements of § 437.67.

**§ 437.39 Flight rules.**

An applicant must provide flight rules as required by § 437.71.

**§ 437.41 Mishap response plan.**

An applicant must provide a mishap response plan that meets the requirements of § 437.75(b).

## **Subpart C – Safety Requirements**

### **§ 437.53 Pre-flight and post-flight operations.**

A permittee must protect the public from adverse effects of hazardous operations and systems in preparing a reusable suborbital rocket for flight at a launch site in the United States and returning the reusable suborbital rocket and any support equipment to a safe condition after flight. At a minimum, a permittee must —

(a) Establish a safety clear zone that will contain the adverse effects of each operation involving a hazard; and

(b) Verify that the public is outside of the safety clear zone before and during any hazardous operation.

### **§ 437.55 Hazard analysis.**

(a) A permittee must identify and characterize each of the hazards and assess the risk to public health and safety and the safety of property resulting from each permitted flight. This hazard analysis must —

(1) Identify and describe hazards, including but not limited to each of those that result from —

(i) Component, subsystem, or system failures or faults;

(ii) Software errors;

(iii) Environmental conditions;

(iv) Human errors;

(v) Design inadequacies; or

(vi) Procedural deficiencies.

(2) Determine the likelihood of occurrence and consequence for each hazard before risk elimination or mitigation.

(3) Ensure that the likelihood and consequence of each hazard meet the following criteria through risk elimination and mitigation measures:

(i) The likelihood of any hazardous condition that may cause death or serious injury to the public must be extremely remote.

(ii) The likelihood of any hazardous condition that may cause major property damage to the public, major safety-critical system damage or reduced capability, a significant reduction in safety margins, or a significant increase in crew workload must be remote.

(4) Identify and describe the risk elimination and mitigation measures required to satisfy paragraph (a)(3) of this section. The measures must include one or more of the following:

- (i) Designing for minimum risk,
- (ii) Incorporating safety devices,
- (iii) Providing warning devices, or
- (iv) Implementing procedures and training.

(5) Demonstrate that the risk elimination and mitigation measures achieve the risk levels of paragraph (a)(3)(i) of this section through validation and verification.

Verification includes:

- (i) Test data,
- (ii) Inspection results, or
- (iii) Analysis.



(b) A permittee must carry out the risk elimination and mitigation measures derived from its hazard analysis.

(c) A permittee must ensure the continued accuracy and validity of its hazard analysis throughout the term of its permit.

**§ 437.57 Operating area containment.**

(a) During each permitted flight, a permittee must contain its reusable suborbital rocket's instantaneous impact point within an operating area determined in accordance with paragraph (b) and outside any exclusion area defined by the FAA in accordance with paragraph (c) of this section.

(b) An operating area —

(1) Must be large enough to contain each planned trajectory and all expected vehicle dispersions;

(2) Must contain enough unpopulated or sparsely populated area to perform key flight-safety events as required by § 437.59;

(3) May not contain or be adjacent to a densely populated area or large concentrations of members of the public; and

(4) May not contain or be adjacent to significant automobile traffic, railway traffic, or waterborne vessel traffic.

(c) The FAA may prohibit a reusable suborbital rocket's instantaneous impact point from traversing certain areas within an operating area by designating one or more areas as exclusion areas, if necessary to protect public health and safety, safety of property, or foreign policy or national security interests of the United States. An exclusion area may be confined to a specific phase of flight.

**§ 437.59 Key flight-safety event limitations.**

(a) A permittee must conduct any key flight-safety event so that the reusable suborbital rocket's instantaneous impact point, including its expected dispersion, is over an unpopulated or sparsely populated area. At a minimum, a key flight-safety event includes:

- (1) Ignition of any primary rocket engine,
- (2) Any staging event, or
- (3) Any envelope expansion.

(b) A permittee must conduct each reusable suborbital rocket flight so that the reentry impact point does not loiter over a populated area.

**§ 437.65 Collision avoidance analysis.**

(a) For a permitted flight with a planned maximum altitude greater than 150 kilometers, a permittee must obtain a collision avoidance analysis from United States Strategic Command.

(b) The collision avoidance analysis must establish each period during which a permittee may not initiate flight to ensure that a permitted vehicle and any jettisoned components do not pass closer than 200 kilometers to a manned or mannable orbital object. A distance of less than 200 kilometers may be used if the distance provides an equivalent level of safety, and if the distance accounts for all uncertainties in the analysis.

**§ 437.67 Tracking a reusable suborbital rocket.**

A permittee must —

(a) During permitted flight, measure in real time the position and velocity of its reusable suborbital rocket; and

(b) Provide position and velocity data to the FAA for post-flight use.

**§ 437.69 Communications.**

(a) A permittee must be in communication with Air Traffic Control during all phases of flight.

(b) A permittee must record communications affecting the safety of the flight.

**§ 437.75 Mishap reporting, responding, and investigating.**

A permittee must report, respond to, and investigate mishaps that occur during permitted activities, in accordance with this section.

(a) Reporting requirements. A permittee must —

(1) Immediately notify the FAA Washington Operations Center if there is a launch or reentry accident or incident or a mishap that involves a fatality or serious injury, as defined in 49 CFR § 830.2;

(2) Notify within 24 hours the FAA’s Office of Commercial Space Transportation if there is a mishap that does not involve a fatality or serious injury, as defined in 49 CFR 830.2; and

(3) Submit within 5 days of the event a written preliminary report to the FAA’s Office of Commercial Space Transportation if there is a launch or reentry accident or incident during a permitted flight. The report must identify the event as a launch or reentry accident or incident, and must include:

(i) The date and time of occurrence,

(ii) A description of the event and sequence of events leading to the launch or reentry accident, or launch or reentry incident, to the extent known,

(iii) The intended and actual location of launch or reentry, including landing or impact on Earth,

(iv) A description of any payload,

(v) The number and general description of any fatalities and injuries,

(vi) Property damage, if any, and an estimate of its value,

(vii) A description of any hazardous materials involved in the event, whether on the reusable suborbital rocket or on the ground,

(viii) Action taken by any person to contain the consequences of the event, and

(ix) Weather conditions at the time of the event.

(b) Response requirements. A permittee must —

(1) Immediately —

(i) Ensure the consequences of a mishap are contained and minimized; and

(ii) Ensure data and physical evidence are preserved.

(2) Report to and cooperate with FAA and National Transportation Safety Board (NTSB) investigations and designate one or more points of contact for the FAA or NTSB; and

(3) Identify and adopt preventive measures for avoiding a recurrence of the event.

(c) Investigation requirements. A permittee must —

(1) Investigate the root cause of an event described in paragraph (a) of this section;

(2) Report investigation results to the FAA upon completion; and

(3) Identify responsibilities, including reporting responsibilities, for personnel assigned to conduct investigations and for any unrelated persons that the permittee retains to conduct or participate in investigations.

## **Subpart D – Terms and Conditions of an Experimental Permit**

### **§ 437.89 Pre-flight reporting.**

(a) Not later than 30 days before each flight or series of flights conducted under an experimental permit, a permittee must provide the FAA with the following information:

- (1) Any payload to be flown, including any payload operations during the flight,
- (2) When the flight or series of flights are planned,
- (3) The operating area for each flight, and
- (4) The planned maximum altitude for each flight.

(b) Not later than 15 days before each permitted flight planned to reach greater than 150 km altitude, a permittee must provide the FAA its planned trajectory for a collision avoidance analysis.