

## 14 CFR Parts 413, 415, and 417 – Commercial Space Transportation Licensing Regulations

### § 413.7 Application.

(a) *Form.* An application must be in writing, in English and filed in duplicate with the Federal Aviation Administration, Associate Administrator for Commercial Space Transportation, Room 331, 800 Independence Avenue, SW., Washington, DC 20591. Attention: Application Review.

(b) *Administrative information.* An application must identify the following:

- (1) The name and address of the applicant;
- (2) The name, address, and telephone number of any person to whom inquiries and correspondence should be directed; and
- (3) The type of license or permit for which the applicant is applying.

(c) *Signature and certification of accuracy.* An application must be legibly signed, dated, and certified as true, complete, and accurate by one of the following:

(1) For a corporation: An officer or other individual authorized to act for the corporation in licensing or permitting matters.

(2) *For a partnership or a sole proprietorship:* A general partner or proprietor, respectively.

(3) For a joint venture, association, or other entity: An officer or other individual authorized to act for the joint venture, association, or other entity in licensing or permitting matters.

(d) *Safety approval.* If the applicant proposes to include a safety element for which the FAA issued a safety approval under part 414 in the proposed license activity, the applicant must—

- (1) Identify the safety approval in the application and explain the proposed use of the approved safety element.
- (2) Show that the proposed use of the approved safety element is consistent with the designated scope specified in the safety approval.
- (3) Certify that the safety element will be used according to any terms and conditions of the issued safety approval.

(e) *Measurement system consistency.* For each analysis, an applicant must employ a consistent measurements system, whether English or metric, in its application and licensing information.

### § 415.25 Application requirements for policy review.

In its launch license application, an applicant shall—

- (a) Identify the model and configuration of any launch vehicle proposed for launch by the applicant.
- (b) Identify structural, pneumatic, propellant, propulsion, electrical and avionics systems used in the launch vehicle and all propellants.
- (c) Identify foreign ownership of the applicant as follows:

- (1) For a sole proprietorship or partnership, identify all foreign ownership;
- (2) For a corporation, identify any foreign ownership interests of 10% or more; and
- (3) For a joint venture, association, or other entity, identify any participating foreign entities.
- (d) Identify proposed launch vehicle flight profile(s), including:
  - (1) Launch site;
  - (2) Flight azimuths, trajectories, and associated ground tracks and instantaneous impact points;
  - (3) Sequence of planned events or maneuvers during flight;
  - (4) Range of nominal impact areas for all spent motors and other discarded mission hardware, within three standard deviations of the mean impact point (a 3-sigma footprint); and
  - (5) For each orbital mission, the range of intermediate and final orbits of each vehicle upper stage, and their estimated orbital lifetimes.

#### **§ 415.33 Safety organization.**

(a) An applicant shall maintain a safety organization and document it by identifying lines of communication and approval authority for all launch safety decisions. Lines of communication, both within the applicant's organization and between the applicant and any federal launch range providing launch services, shall be employed to ensure that personnel perform launch safety operations in accordance with range safety requirements and with plans and procedures required by this subpart. Approval authority shall be employed to ensure compliance with range safety requirements and with plans and procedures required by this subpart.

(b) *Safety official.* An applicant shall identify by name, title, and qualifications, a qualified safety official authorized to examine all aspects of the applicant's launch safety operations and to monitor independently personnel compliance with the applicant's safety policies and procedures. The safety official shall report directly to the person responsible for an applicant's licensed launches, who shall ensure that all of the safety official's concerns are addressed prior to launch.

#### **§ 415.35 Acceptable flight risk.**

(a) *Flight risk through orbital insertion or impact.* Acceptable flight risk through orbital insertion for an orbital launch vehicle, and through impact for a suborbital launch vehicle, is measured in terms of the expected average number of casualties ( $c$ ) to the collective members of the public exposed to debris hazards from any one launch. To obtain safety approval, an applicant must demonstrate that the risk level associated with debris from an applicant's proposed launch meets the public risk criteria of §417.107(b)(1) of this chapter for impacting inert and impacting explosive debris.

(b) *Hazard identification and risk assessment.* To demonstrate compliance with paragraph (a) of this section, an applicant must file an analysis that identifies hazards and assesses risks to public health and safety and safety of property associated with nominal and non-nominal flight of its proposed launch.

(c) *Design.* A launch vehicle must be designed to ensure that flight risks meet the criteria of paragraph (a) of this section. An applicant must identify and describe the following:

- (1) Launch vehicle structure, including physical dimensions and weight;
  - (2) Hazardous and safety critical systems, including propulsion systems; and
  - (3) Drawings and schematics for each system identified under paragraph (c)(2) of this section.
- (d) *Operation.* A launch vehicle must be operated in a manner that ensures that flight risks meet the criteria of paragraph (a) of this section. An applicant must identify all launch operations and procedures that must be performed to ensure acceptable flight risk.

#### **§ 415.37 Flight readiness and communications plan.**

(a) *Flight readiness requirements.* An applicant must designate an individual responsible for flight readiness. The applicant must file the following procedures for verifying readiness for safe flight:

- (1) Launch readiness review procedures involving the applicant's flight safety personnel and Federal launch range personnel involved in the launch, as required by §417.117(g) of this chapter.
- (2) Procedures that ensure mission constraints, rules and abort procedures are listed and consolidated in a safety directive or notebook approved by licensee flight safety and Federal launch range personnel.
- (3) Procedures that ensure currency and consistency of licensee and Federal launch range countdown checklists.
- (4) Dress rehearsal procedures that—
  - (i) Ensure crew readiness under nominal and non-nominal flight conditions;
  - (ii) Contain criteria for determining whether to dispense with one or more dress rehearsals; and
  - (iii) Verify currency and consistency of licensee and Federal launch range countdown checklists.
- (5) Procedures for ensuring the licensee's flight safety personnel adhere to the crew rest rules of §417.113(f) of this chapter.

(b) *Communications plan requirements.* An applicant must file a communications plan that meets §417.111(k) of this chapter, and that provides licensee and Federal launch range personnel communications procedures during countdown and flight.

(c) An applicant must file procedures that ensure that licensee and Federal launch range personnel receive a copy of the communications plan required by paragraph (b) of this section, and that the Federal launch range concurs in the communications plan.

#### **§ 415.39 Safety at end of launch.**

To obtain safety approval, an applicant must demonstrate compliance with §417.129 of this chapter, for any proposed launch of a launch vehicle with a stage or component that will reach Earth orbit.

#### **§ 415.41 Accident investigation plan.**

An applicant must file an accident investigation plan (AIP), that satisfies §417.111(g) of this chapter, and contains the applicant's procedures for reporting and responding to launch accidents, launch incidents, or other mishaps, as defined by §401.5 of this chapter.

#### **§ 415.59 Information requirements for payload review.**

- (a) A person requesting review of a particular payload or payload class shall identify the following:
- (1) Payload name;
  - (2) Payload class;
  - (3) Physical dimensions and weight of the payload;
  - (4) Payload owner and operator, if different from the person requesting payload review;
  - (5) Orbital parameters for parking, transfer and final orbits;
  - (6) Hazardous materials, as defined in §401.5 of this chapter, and radioactive materials, and the amounts of each;
  - (7) Intended payload operations during the life of the payload; and
  - (8) Delivery point in flight at which the payload will no longer be under the licensee's control.

#### **§ 415.103 General.**

- (a) The FAA conducts a safety review to determine whether an applicant is capable of conducting launch processing and flight without jeopardizing public health and safety and safety of property. The FAA issues a safety approval to a license applicant if the applicant satisfies the requirements of this subpart and demonstrates that it will meet the safety responsibilities and requirements of part 417 of this chapter.
- (b) The FAA advises an applicant, in writing, of any issue raised during a safety review that would impede issuance of a safety approval. The applicant may respond, in writing, or amend its license application as required by §413.17 of this chapter.
- (c) An applicant must make available to the FAA upon request a copy of any information incorporated into a license application by reference.
- (d) A safety approval is part of the licensing record on which the FAA bases its licensing determination.

#### **§ 415.203 Environmental information.**

An applicant shall submit environmental information concerning:

- (a) A proposed launch site not covered by existing environmental documentation;

- (b) A proposed launch vehicle with characteristics falling measurably outside the parameters of existing environmental documentation;
- (c) A proposed launch from an established launch site involving a vehicle with characteristics falling measurably outside the parameters of any existing environmental impact statement that applies to that site;
- (d) A proposed payload that may have significant environmental impacts in the event of a mishap; and
- (e) Other factors as determined by the FAA.

#### **§ 417.11 Continuing accuracy of license application; application for modification of license.**

(a) A launch operator must ensure the representations contained in its application are accurate for the entire term of the license. A launch operator must conduct a licensed launch and carry out launch safety procedures in accordance with its application.

(b) After the FAA issues a launch license, a launch operator must apply to the FAA for modification of a launch license if—

(1) A launch operator proposes to conduct a launch or carry out a launch safety procedure or operation in a manner that is not authorized by the license; or

(2) Any representation contained in the license application that is material to public health and safety or safety of property would no longer be accurate and complete or would not reflect the launch operator's procedures governing the actual conduct of a launch. A representation is material to public health and safety or safety of property if it alters or affects the launch operator's launch plans or procedures, class of payload, orbital destination, type of launch vehicle, flight path, launch site, launch point, or any safety system, policy, procedure, requirement, criteria or standard.

(c) A launch operator must prepare and file an application to modify a launch license under part 413 of this chapter. The launch operator must identify any part of its license or license application that a proposed modification would change or affect.

(d) The FAA reviews all approvals and determinations required by this chapter to determine whether they remain valid in light of a proposed modification. The FAA approves a modification that satisfies the requirements of this part.

(e) Upon approval of a modification, the FAA issues to a launch operator either a written approval or a license order modifying the license if a stated term or condition of the license is changed, added or deleted. A written approval has the full force and effect of a license order and is part of the licensing record.

#### **§ 417.13 Agreement with Federal launch range.**

Before conducting a licensed launch from a Federal launch range, a launch operator must—

(a) Enter into an agreement with a Federal launch range to provide access to and use of U.S. Government property and services required to support a licensed launch from the facility and for public safety related operations and support. The agreement must be in effect for the conduct of any licensed launch; and

(b) Comply with any requirements of the agreement with the Federal launch range that may affect public safety and safety of property during the conduct of a licensed launch, including flight safety procedures and requirements.

### **§ 417.15 Records.**

(a) A launch operator must maintain all records necessary to verify that it conducts licensed launches according to representations contained in the licensee's application. A launch operator must retain records for three years after completion of all launches conducted under the license.

(b) If a launch accident or launch incident occurs, as defined by §405.1 of this chapter, a launch operator must preserve all records related to the event until completion of any Federal investigation and the FAA advises the licensee not to retain the records. The launch operator must make available to Federal officials for inspection and copying all records that these regulations require the launch operator to maintain.

### **§ 417.17 Launch reporting requirements and launch specific updates.**

(a) *General.* A launch operator must satisfy the launch reporting requirements and launch specific updates required by this section and by the terms of the launch operator's license. A launch operator must file any change to the information in the license application, not identified by this section, with the FAA as a request for license modification as required by §417.11.

(b) *Launch reporting requirements for a launch from a Federal launch range or a non-Federal launch site.* (1) *Launch schedule and point of contact.* For each launch, a launch operator must file a launch schedule that identifies each review, rehearsal, and safety critical launch processing. A launch operator must file a point of contact for the schedule. The launch schedule must be filed and updated in time to allow FAA personnel to participate in the reviews, rehearsals, and safety critical launch processing.

(2) *Sixty-day report.* Not later than 60 days before each flight conducted under a launch operator license, a launch operator must provide the FAA the following launch-specific information:

(i) Payload information required by §415.59 of this chapter; and

(ii) Flight information, including the launch vehicle, planned flight path, staging and impact locations, and any on-orbit activity of the launch vehicle, including each payload delivery point.

(3) *U.S. Space Command Launch Notification.* Not later than noon, EST, 15 days before each licensed flight, a launch operator must file a completed Federal Aviation Administration/U.S. Space Command (FAA/USSPACECOM) Launch Notification Form (OMB No. 2120-0608) with the FAA.

(c) *Launch specific updates for a launch from a non-Federal launch site.* A launch operator must file a launch specific update, required by this part, and any required by the terms of the launch license, for every substantive change to the information outlined in this part. For each launch, a launch operator must file the following launch specific updates:

(1) *Flight safety system test schedule.* For each launch of a launch vehicle flown with a flight safety system, a launch operator must file an updated flight safety system test schedule and points of contact no later than six months before flight. A launch operator must immediately file any later change to ensure that the FAA has the most current data.

(2) *Launch plans.* A launch operator must file any changes or additions to its launch plans required by §417.111 to the FAA no later than 15 days before the associated activity is to take place. A launch operator must file the countdown plan with the FAA no later than 15 days before the countdown is to take place. If a change involves the addition of a new public hazard or the elimination of any control for a previously identified public hazard, a launch operator must request a license modification under §417.11.

(3) *Thirty-day flight safety analysis update.* A launch operator must file updated flight safety analysis products, using previously approved methodologies, for each launch no later than 30 days before flight.

(i) The launch operator:

(A) Must account for vehicle and mission specific input data;

(B) May reference previously approved analysis products and data that are applicable to the launch or data that is applicable to a series of launches;

(C) Must account for potential variations in input data that may affect any analysis product within the final 30 days before flight;

(D) Must file the analysis products using the same format and organization used in its license application; and

(E) May not change an analysis product within the final 30 days before flight unless the launch operator identified a process for making a change in that period as part of the launch operator's flight safety analysis process and the FAA approved the process by grant of a license to the launch operator.

(ii) A launch operator need not file the 30-day analysis if the launch operator:

(A) Demonstrates that the analysis filed during the license application process satisfies all the requirements of this subpart; and

(B) Demonstrates the analysis does not need to be updated to account for launch specific factors.

(4) *Flight termination system qualification test reports.* For the launch of a launch vehicle flown with a flight safety system, a launch operator must file all flight termination system qualification test reports, or test report summaries, as required by section E417.1(i) of appendix E of this part, with the FAA no later than six months before the first flight attempt. The summary must identify when and where the tests were performed and provide the results. Complete qualification test reports must be made available to the FAA upon request.

(5) *Flight termination system acceptance and age surveillance test report summaries.* For the launch of a launch vehicle flown with a flight safety system, a launch operator must file a summary of the results of each flight termination system acceptance and age surveillance test, or the complete test report, as required by section E417.1(i) of appendix E of this part, no later than 30 days before the first flight attempt for each launch. The summary must identify when and where the tests were performed and provide the results. Complete acceptance and age surveillance test reports must be made available to the FAA upon request.

(6) *Command control system acceptance test reports.* For the launch of a launch vehicle flown with a flight safety system, a launch operator must file all command control system acceptance test reports, or test report summaries, as required by §417.305(d), with the FAA no later than 30 days before the first flight attempt. The summary must identify when and where the tests were performed and provide the results. Complete acceptance test reports must be made available to the FAA upon request.

(7) *Ground safety analysis report updates.* A launch operator must file ground safety analysis report updates with the FAA as soon as the need for the change is identified and at least 30 days before the associated activity takes place. A launch operator must file a license modification request with the FAA for each change that involves the addition of a hazard that can affect public safety or the elimination of a previously identified hazard control for a hazard that still exists.

## **§ 417.19 Registration of space objects.**

(a) To assist the U.S. Government in implementing Article IV of the 1975 Convention on Registration of Objects Launched into Outer Space, each launch operator must provide to the FAA the information required by paragraph (b) of this section for all objects placed in space by a licensed launch, including a launch vehicle and any components, except:

(1) Any object owned and registered by the U.S. Government; and

(2) Any object owned by a foreign entity.

(b) For each object that must be registered in accordance with this section, not later than 30 days following the conduct of a licensed launch, an operator must file the following information:

(1) The international designator of the space object(s);

(2) Date and location of launch;

(3) General function of the space object; and

(4) Final orbital parameters, including:

(i) Nodal period;

(ii) Inclination;

(iii) Apogee; and

(iv) Perigee.

#### **§ 417.203 Compliance.**

(a) *General.* A launch operator's flight safety analysis must satisfy the performance requirements of this subpart. The flight safety analysis must also meet the requirements for methods of analysis contained in appendices A and B of this part for a launch vehicle flown with a flight safety system and appendices B and C of this part for an unguided suborbital launch vehicle that uses a wind-weighting safety system except as otherwise permitted by this section. A flight safety analysis for a launch may rely on an earlier analysis from an identical or similar launch if the analysis still applies to the later launch.

(b) *Method of analysis.* (1) For each launch, a launch operator's flight safety analysis must use—

(i) A method approved by the FAA during the licensing process;

(ii) A method approved as a license modification by the FAA; or,

(iii) If the launch takes place from a Federal launch range, a method approved as part of the FAA's launch site safety assessment of the Federal range's processes.

(2) Appendix A of this part contains requirements that apply to all methods of flight safety analysis. A licensee must notify the FAA for any change to the flight safety analysis method. A licensee must file any material change with the FAA as a request for license modification before the launch to which the proposed change would apply. Section 417.11 contains requirements governing a license modification.

(c) *Alternate analysis method.* The FAA will approve an alternate flight safety analysis method if a launch operator demonstrates, in accordance with §406.3(b), that its proposed analysis method provides an equivalent level of fidelity to that required by this subpart. A launch operator must demonstrate that an alternate flight safety analysis method is based on accurate data and scientific principles and is statistically valid. The FAA will not find a launch operator's application for a license or license modification sufficiently complete to begin review under §413.11 of this chapter until the FAA approves the alternate flight safety analysis method.



(d) *Analyses performed by a Federal launch range.* This provision applies to all sections of this subpart. The FAA will accept a flight safety analysis used by a Federal launch range without need for further demonstration of compliance to the FAA, if:

(1) A launch operator has contracted with a Federal launch range for the provision of flight safety analysis; and

(2) The FAA has assessed the Federal launch range, through its launch site safety assessment, and found that the range's analysis methods satisfy the requirements of this subpart. In this case, the FAA will treat the Federal launch range's analysis as that of a launch operator.

(e) *Analysis products.* For a licensed launch that does not satisfy paragraph (d) of this section, a launch operator must demonstrate to the FAA compliance with the requirements of this subpart, and must include in its demonstration the analysis products required by part 415 subpart F of this chapter, part 417 subpart A, and appendices A, B, C, and I of this part, depending on whether the launch vehicle uses a flight safety system or a wind-weighting safety system.