

## FAA 7400.2P

Amateur Rocket and Commercial Space Operations/  
General

### Section 1. General

#### 31-1-1. PURPOSE

This chapter provides guidance, policies, and procedures for processing requests for amateur rocket, commercial launch and reentry vehicle, and commercial launch and reentry site operations in the [NAS](#).

#### 31-1-2. AUTHORITY

- a. Title 51 of the United States Code (51 U.S.C.), National and Commercial Space Programs, is the compilation of the general laws regarding space programs. 51 U.S.C. was issued December 18, 2010, when signed ("H.R. 3237".) into law under PL 111-314.
- b. Title 14 of the Code of Federal Regulations (14 CFR) Aeronautics and Space:
  1. Chapter I, Subchapter F, Part 91, Air Traffic and General Operating Rules;
  2. Chapter I, Part 101, Moored Balloons, Kites, Amateur Rockets, Unmanned Free Balloons, and Certain Model Aircraft;
  3. Chapter III, Commercial Space Transportation, Federal Aviation Administration, Department of Transportation, Parts 400-460.

#### 31-1-3. POLICY

- a. ATO service area forwards all requests for Class II amateur rockets that will enter Class A airspace and all Class III requests to the Office of Commercial Space Transportation (AST) for additional safety analysis.
- b. All proposals for development of launch or reentry sites, and the conducting of commercial space launches and reentry operations, must be immediately forwarded to AST.
- c. The Federal Aviation Administration's policy is to use an interdisciplinary approach to ensure compliance with all laws and regulations. This policy requires all projects be reviewed in a timely manner by all necessary stakeholders to determine the impact to the [NAS](#).

#### 31-1-4. CONTROLLING FACILITY

The FAA or DoD facility having control jurisdiction over the affected airspace where the amateur rocket, launch vehicle, or reentry vehicle is projected to operate must be designated as the controlling facility. When multiple facilities may be impacted by an operation, one facility will be designated as the lead and be designated as the controlling agency. The controlling facility will be responsible for the execution of the appropriate airspace management.

#### 31-1-5. DEFINITIONS

- a. Aircraft hazard area - the predicted location and extent of the airspace potentially containing falling debris generated by an amateur rocket, launch vehicle, reentry vehicle failure, or from the planned jettison of stages or other hardware.
- b. Amateur rocket - an unmanned rocket that is propelled by a motor or motors having a combined total impulse of 889,600 Newton-seconds (200,000 pound-seconds) or less;

and cannot reach an altitude greater than 150 kilometers (93.2 statute miles) above the Earth's surface.

- c. Amateur rocket classes:
  - 1. Class 1 - a model rocket that uses no more than 125 grams (4.4 ounces) of propellant; uses a slow-burning propellant; is made of paper, wood, or breakable plastic; contains no substantial metal parts; and weighs no more than 1,500 grams (53 ounces) including the propellant.
  - 2. Class 2 - a high power rocket, other than a model rocket, that is propelled by a motor or motors having a combined total impulse of 40,960 Newton-seconds (9,208 pound-seconds) or less.
  - 3. Class 3 - an advanced high-power rocket, other than a model rocket or high-power rocket.
- e. Ground hazard area - the required separation distance between the launch point and nearest people or property that are not associated with the operation.
- f. Launch vehicle - a vehicle built to operate in, or place a payload in, outer space or a suborbital rocket. Chapter III requires that launch vehicle operations be licensed by AST.
- g. Operator - an amateur rocket operator or an entity that has received a license or permit from AST to conduct a launch or reentry operation.
- h. Reentry vehicle - a reusable launch vehicle designed to return from Earth's orbit or outer space to Earth substantially intact. The performance and maneuverability of reentry vehicles may vary depending upon the design of the vehicle, including those that descend via parachute, those that glide to a landing, and those that use rocket or jet power to land.

### **31-1-6. RESOURCES**

- a. Current regulations can be viewed at [ecfr.gov](http://ecfr.gov).
  - 1. Commercial space regulations can be found at 14 CFR Chapter III, Parts 400-460.
  - 2. Amateur rocket regulations can be found at 14 CFR, Part 101.
- b. The FAA's Commercial Space Transportation organization website contains information about current and planned launches, issued licenses, industry news, and announcements.
- c. Additional amateur rocketry information can be found at the National Association of Rocketry (NAR) website at [www.NAR.org](http://www.NAR.org).
- d. FAA Order JO 7210.3, Facility Operation and Administration, contains guidance and policy for processing waiver/authorizations applicable to amateur rocket operations as well as commercial space letter of agreement facilitation and coordination.
- e. FAA Order 7930.2, Notices to Air Missions ([NOTAM](#)), contains procedures for issuance of "Airspace," "Temporary Flight Restriction," and "[ALTRV](#)" [NOTAMs](#).
- f. FAA Order JO 7610.4 .Special Operations established authority, responsibility, and general operating procedures under the [ALTRV](#) concept for Central Altitude Reservation Function (CARF) and other concerned ATC facilities.

## Amateur Rocket and Commercial Space Operations/

### Amateur Rockets

#### **Section 2. Amateur Rockets**

### **31-2-1. RESPONSIBILITIES**

- a. Air traffic is authorized to issue waiver/ authorizations to Part 101 for amateur rocket activities and is responsible for integrating amateur rocket activities into the [NAS](#). The appropriate service area is air traffic's point of contact for Part 101 and associated waiver/authorizations, and is responsible for coordinating certain proposals regarding airspace operations and procedures with AST.
- b. AST supports the waiver/authorization process by providing Air Traffic with the results of safety analyses and recommendations pertaining to proposed amateur rocket activities.
- c. AJV-P2 provides oversight and support to service areas for amateur rocket operations.
- d. Communication and coordination between AST and Air traffic is paramount. Since AST personnel are not located at the regional offices, the required AST coordination occurs at FAA HQ.

### **31-2-2. GENERAL OPERATING LIMITATIONS**

- a. In accordance with Part 101, an amateur rocket must:
  - 1. Launch on a suborbital trajectory;
  - 2. Not cross into the territory of a foreign country unless an agreement is in place between the United States and the country of concern;
  - 3. Be unmanned;
  - 4. Not create a hazard to persons, property, or other aircraft.
- b. In addition to the above, Class 2-High Power Rockets and Class 3-Advanced High Power Rockets, must not operate:
  - 1. At any altitude where clouds or obscuring phenomena of more than five-tenths coverage prevail;
  - 2. At any altitude where the horizontal visibility is less than five miles;
  - 3. Into any cloud;
  - 4. Between sunset and sunrise without prior authorization from the FAA;
  - 5. Within 5 nautical miles of any airport boundary without prior authorization from the FAA;
  - 6. In controlled airspace without prior authorization from the FAA;
  - 7. Unless observing the greater of the following separation distances from any person or property that is not associated with the operation:
    - (a) Not less than one-quarter of the maximum expected altitude;
    - (b) 1,500 feet;
  - 8. Unless a person at least eighteen years old is present, is charged with ensuring the safety of the operation, and has final approval authority for initiating high-power rocket flight;
  - 9. Unless reasonable precautions are provided to report and control a fire caused by rocket activities.

### **31-2-3. AMATEUR ROCKET PROCESS**

The applicant must submit FAA Form 7711-2, Application for Certificate of Waiver or Authorization, at least 45 days prior to the event, and must include the required information as outlined in section 101.29.

The service area is the focal point for receiving, processing, and signing waiver/authorization requests. A service area may delegate waiver/ authorization processing responsibilities to a facility, in accordance with FAA Order JO 7210.3.

When a proposal overlaps service area geographical jurisdictions, the affected service area must coordinate to determine which office will serve as the lead office for processing the proposal. Coordination between service areas is also required when the affected geographical area and the ATC facility are under the jurisdiction of different service areas or facilities.

- a.** A waiver/authorization is required for amateur rocket operations conducted outside the operating limitations per paragraph 31-2-2. The most common reason for requesting a waiver/authorization is to operate within controlled airspace. An applicant must submit its waiver/authorization request to the service area. If the applicant submits its request directly to AST, AST must direct the applicant to submit its request directly to the service area.
- b.** The service area must perform the initial review of the waiver/authorization request.
  - 1.** The service area must verify that FAA Form 7711-2 is complete and that the information required in section 101.29 has been provided. The service area must return incomplete waiver/ authorization requests to the applicant for additional information. Requests that cannot be accommodated will not be coordinated beyond the service area.
  - 2.** All complete waiver/authorization requests must be assigned a unique waiver/authorization number for ease of processing. The number must consist of the three-letter service area identifier, four digits containing the year and number of the request received that year, and the contraction "RKT" (for example, WSA-1034-RKT indicates Western Service Area, the year 2010, and the 34th waiver/authorization for that year). This number must be used in all correspondence and coordination when referring to this operation.
  - 3.** No less than 30 days prior to the proposed launch date, the service area must forward requests that require AST safety analysis (all Class II intended to enter Class A airspace, all Class III requests and all requests to waive the standoff distance of section 101.25(g)) to AST and the ATO Commercial Space POC (ATO POC).
  - 4.** AST must conduct a safety analysis that determines or verifies the following:
    - (a)** The size and location of the ground hazard area.
    - (b)** The size and location of the aircraft hazard area(s) and the times during which the hazard area(s) must remain clear of aircraft during both normal operations and in the event of a failure.
    - (c)** Any additional steps that the amateur rocket operator must take to ensure public safety.
  - 5.** AST must coordinate with the service area when additional information is required from the applicant.
  - 6.** No less than 10 days prior to the proposed launch date, AST must provide its safety analysis results and any related recommendations to the service area and the ATO POC.

- c. The service area must coordinate with the appropriate facilities for the processing of the waiver/authorization. This coordination must include the performance of an Aeronautical Analysis, as described in paragraph 31-2-4.
- d. The service area must sign and issue the waiver/authorization with appropriate terms/conditions.
  - 1. The service area must provide a copy of the approved waiver/authorization to the applicant and facilities.
  - 2. For any waiver/authorization requests that require review under subparagraph b.3, the service area must provide a copy of approved waiver/authorization to AST and AJV-P2.
  - 3. The service area must archive the approved waiver/authorization and associated data for tracking purposes through a local process.
- e. The facility must develop an Airspace Management strategy as described in paragraph 31-2-5.
- f. Prior to each activity, the facility must develop an Electronic System Impact Report in accordance with FAA Order JO 7210.3.
- g. A NOTAM must be issued per the terms of the waiver/authorization.

#### **31-2-4. AERONAUTICAL ANALYSIS**

Prior to issuing a Certificate of Waiver or Authorization for amateur rocket operations, the service area and appropriate facilities must conduct an aeronautical analysis to identify any aeronautical impacts to be resolved or mitigated. The analysis must be specific to the proposed site, and may include, but is not limited to, the following steps:

- a. Gather details on the amateur rocket event, such as location, date(s), time, number of launches, and expected altitude.
- b. Identify the class of rocket operations specified in the Certificate of Waiver or Authorization, as this will determine which sections of 14 CFR Part 101 apply.

#### **NOTE-**

*The applicant is responsible for determining the appropriate rocket class based on the definitions in Part 101.*

- c. Determine the class of airspace where the event is proposed, and consider the impact of the rocket operation to local airports, VFR aircraft and routes, IFR routes and procedures, military training routes, special use airspace, etc.

#### **31-2-5. AIRSPACE MANAGEMENT**

Per 14 CFR § 101.23, the amateur rocket operator is responsible for ensuring the safety of persons and property on the ground and of aircraft flying nearby. Facilities develop airspace management strategies, based on the operator's proposal, and/or the waiver/authorization with identified hazard areas, to maintain the safety and efficiency of the [NAS](#).

- a. Facilities should consider all available airspace management tools when developing the airspace management strategy. The following criteria is recommended or required as outlined below for implementing airspace management:
  - 1. For launches to altitudes less than 10,000 ft MSL, no airspace management is required.
  - 2. For launches to altitudes between 10,000 ft and 17,999 ft MSL, airspace management is recommended.

3. For launches to altitudes above 18,000 ft MSL, airspace management is required.

**NOTE-**

*Airspace management must be implemented for Class E airspace above FL 600 if the proposed operation is above FL 600.*

- b. Existing special use airspace may be used only if permission has been granted by the using agency or controlling agency, as appropriate. The amateur rocket operator is responsible for obtaining the required permission.
- c. A temporary flight restriction (TFR) for space flight operations as described in 14 CFR § 91.143 may be used to segregate nonparticipating aircraft from amateur rocket operations, as necessary. TFRs are the only available means for ATC facilities to restrict both IFR and VFR aircraft from identified hazard areas below 18,000 feet MSL.
- d. Facilities must determine the impact of the operation to the [NAS](#), accounting for any mitigation identified in the airspace management strategy.
- e. The service area must not issue the Certificate of Waiver or Authorization until all concerns or objections have been considered.

**31-2-6. WAIVER/AUTHORIZATION FORMAT AND CONTENT**

- a. Use FAA Form 7711-1, Certificate of Waiver or Authorization, to issue the waiver/authorization.
- b. At a minimum, the waiver/authorization must contain the following:
  1. Specific section of Part 101 to be waived or authorized.
  2. Name, address, and telephone number of the applicant.
  3. Activities approved for launch.
  4. Location of the approved launch site in coordinates and description of location (for example, 30NM west of ABO VOR).
  5. Approved dates and times of launch operations.
  8. Other provisions or requirements deemed necessary to maintain safety of the [NAS](#).
- c. The service area office may suspend or revoke a waiver/authorization whenever a question arises about the safety of the operation, compliance with safety precautions or conditions of approval, or if an unforeseen impact on aeronautical operations occurs.
- d. Terms and conditions. In most cases, an attachment containing terms and conditions of the Certificate of Waiver or Authorization will be included. Provisions commonly addressed in terms and conditions may include, but are not limited to, the following:
  1. Requirements on the operator to use ground observers ("spotters") to ensure that the airspace is clear of aircraft.
  2. Additional requirements on the operator for ensuring public safety, including any requirements pertaining to the recommendations provided by AST described in paragraph 31-2-3.
  3. Deviation from CFRs applies to the specific CFR referenced in the waiver/authorization.
  4. Additional requirements on the operator, beyond those listed in paragraphs [31-2-6b](#) and [31-2-7](#), for notification and communication with the ATC facility, including real time communications.

**31-2-7. NOTIFICATION TO AIR TRAFFIC FACILITIES**

Part 101 requires all Class 2 and 3 amateur rocket operators to notify the FAA air traffic facility nearest the place of intended operation prior to the launch. Notice of the launch must be provided to Air Traffic no less than 24 hours and no more than 3 days before the launch operation. If the operation requires a waiver/authorization, the waiver/ authorization must contain the names and phone numbers of the facilities to be notified. If required by the waiver/authorization, the operator must ensure that real time communications are available with the air traffic facility in the event of unforeseen circumstances.

**31-2-8. NOTAMS**

A NOTAM must be issued that includes the keywords "airspace" and "rocket launch activity," the site description, and effective dates and times. It should also include a brief narrative describing the rocket operation, numbers and types of rockets involved, and contact information for nonparticipating pilots.