

# Proposed Rules

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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Parts 1, 101, 400, and 401

[Docket No. FAA-2007-27310; Notice No. 07-06]

RIN 2120-A188

#### Requirements for Amateur Rocket Activities

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** The Federal Aviation Administration (FAA) is proposing revisions to amateur rocket regulations and activities to preserve the level of safety associated with amateur rocketry. Current regulations are outdated and do not reflect current industry practice. This action would update our regulations and guidance for amateur rocket activities.

We propose to change the amateur rocket classifications, the way we collect information from operators of advanced amateur rocket launches, and the format of the regulations. In addition, we propose to address and correct minor inconsistencies in the present rules. We would take this action to update our regulations and align them with advances in the amateur rocket industry. We would also codify certain operating restrictions that are already widely used but are important enough to be required universally.

**DATES:** Send your comments on or before September 12, 2007.

**ADDRESSES:** You may send comments, identified by Docket No. FAA-2007-27310, using any of the following methods:

- *DOT Docket Web site:* Go to <http://dms.dot.gov> and follow the instructions for sending your comments electronically.

- *Government-wide rulemaking Web site:* Go to <http://www.regulations.gov>

and follow the instructions for sending your comments electronically.

- *Mail:* Send comments to the Docket Management Facility; U.S. Department of Transportation, 1200 New Jersey Avenue, SE., West Building Ground Floor, Room W12-140, Washington, DC 20590.

- *Fax:* Fax comments to the Docket Management Facility at 202-493-2251.

- *Hand Delivery:* Bring comments to the docket Management Facility in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** For technical questions concerning this proposed rule contact Charles P. Brinkman, Licensing and Safety Division (AST-200), Commercial Space Transportation, Federal Aviation Administration, 800 Independence Avenue, Washington, DC 20591, telephone (202) 267-7715; or Ellen Crum, Office of Airspace and Rules, Air Traffic Organization, Federal Aviation Administration, 202-493-4562. For legal questions concerning this proposed rule contact Gary Michel, Office of the General Counsel, Federal Aviation Administration, 800 Independence Avenue, Washington, DC 20591, telephone (202) 267-3148.

**SUPPLEMENTARY INFORMATION:** Later in this preamble under the Additional Information section, we discuss how you can comment on this proposal and how we will handle your comments. Included in this discussion is related information about the docket, privacy, and the handling of proprietary or confidential business information. We also discuss how you can get a copy of this proposal and related rulemaking documents.

#### Authority for This Rulemaking

The FAA's authority to issue rules on aviation safety is found in Title 49 of the United States Code. Subtitle I, Section 106 describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the agency's authority.

This rulemaking is promulgated under the authority described in Subtitle VII, Part A, Subpart III, Sections 40102, 40103, 40113-40114, and 44701-44702. Under those sections, the FAA is charged with prescribing

regulations that govern air traffic rules on the flight of aircraft (which include unmanned rockets). This regulation is within the scope of that authority because it defines classes of unmanned rockets and details the information the FAA would require to issue a waiver to allow launching of an amateur rocket.

Authority for this rulemaking is derived from the FAA's mission to regulate commercial launch activities in such a manner as to protect public health and safety and safety of property.

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#### I. Background

##### A. Regulatory History

Regulations governing unmanned rockets are found in Title 14 of the Code of Federal Regulations (14 CFR), Chapter I, part 101 and Chapter III, parts

400 through 499. The definitions of *rocket* and *amateur rocket activities* are found in 14 CFR 1.1 and 401.5, respectively.

In 1963, the Federal Government added the first regulations applying to the operations of unmanned rockets to 14 CFR part 101. Part 101 governs the safe operation of unmanned rockets in the National Airspace System (NAS). It requires the advance notice to and approval by the FAA for some rocket launches. The regulations ensure the safety of aircraft flying in the airspace and the safety of persons and property close to the launches. In 1963, the focus was on risks to persons and property near the launches. This was a reasonable focus because the model rockets did not have a great potential for creating hazards far from their launch points.

In 1984, Congress passed the Commercial Space Launch Act (CSLA), as codified and amended at 49 U.S.C. Subtitle IX—Commercial Space Transportation, chapter 701, Commercial Space Launch Activities, 49 U.S.C. 70101–70121. 65 FR 63922 (Oct. 25, 2000). The CSLA directs the Department of Transportation and thus the FAA, through delegations, to:

- Oversee, license, and regulate commercial launch and reentry activities and the operation of launch and reentry sites as carried out by U.S. citizens or within the United States,
- Exercise this responsibility consistent with public health and safety, safety of property, and the national security and foreign policy interests of the United States,
- Promote commercial space launches by the private sector, and
- Implement regulations in furtherance of the CSLA.

In 1988, we issued the “Commercial Space Transportation Licensing Regulations”. Section 401.5 defined amateur rocket activities and exempted launches of limited performance rockets from licensing requirements. Amateur rocket activities are defined as rocket activity that meets all of the following conditions:

- Are conducted at a private site,
- Are powered by a motor or motors with a total impulse of 200,000 pound-seconds or less,
- Have a total burning or operating time of less than 15 seconds, and
- Have a ballistic coefficient of less than 12 pounds per square inch. (Ballistic coefficient is defined as the gross weight in pounds divided by the frontal area of the rocket vehicle.)

Neither the CSLA nor its legislative history revealed any intent by Congress for amateur rocket activities, which then

were conducted primarily for recreational or educational purposes, to be licensed. Although the term amateur was used, and the majority of activity was not done for profit, the regulatory definition did not contain any provisions concerning financial interests.

In 1992, the National Association of Rocketry (NAR) and the Hobby Industry Association (HIA) petitioned the FAA to raise the upper weight limit on model rockets from 16 ounces (454 grams) to 53 ounces (approximately 1,500 grams). This request addressed the rapid development of larger model rockets. In response, the FAA amended part 101 to include a large model rocket category. The FAA acknowledged that organized rocket groups had done an admirable job in monitoring and preserving safety in launch activities. It also recognized that the larger model rockets posed a greater risk of collision with general aviation aircraft and a greater hazard to persons and property on the ground.

In 1995, the Commercial Space Transportation organization and its responsibilities were transferred from an Office under the DOT to a Line of Business under the FAA as the Office of Commercial Space Transportation (AST). The change in structure did not affect operations; AST continued to regulate rocket launches in the same manner as before.

The FAA, as a whole, regulates unmanned rocket activities through its Air Traffic and Commercial Space Transportation organizations. Air Traffic grants requests for airspace waivers and takes appropriate actions, such as issuing Notices To Airmen (NOTAMS). FAA Order 7400.2F contains operating procedures for Commercial Space Transportation to review rocket activities—specifically those operations where the maximum altitude is greater than 25,000 feet above ground level (AGL).

Regulations for licensed launches are found in 14 CFR parts 101 and 400 through 499, whereas regulations governing amateur rocket activity are found in 14 CFR part 101. Launches conducted by other U.S. Government agencies for the U.S. Government are not subject to FAA licensing requirements.

#### B. The Need for New Regulations

Historically, the FAA has relied on state and local regulation, voluntary self-regulation, and its own analysis to fulfill its oversight responsibility for unmanned rocket operations under part 101. The voluntary self-regulation has been carried out by the organizations sponsoring these activities. When we

amended part 101 in 1994, we included provisions for large model rockets. The voluntary self-regulation and state and local regulations were effective for purposes of protecting public safety for model and large model rockets. However, amateur rocket performance has continued to improve and participation in amateur rocket launches has increased significantly. Therefore, the once remote possibility of an accident or incident resulting from amateur rocket activities has become more likely. The FAA now believes these activities need regulation appropriate for continued safe operation. This rulemaking is intended to preserve the safety record of amateur rocket activities, address inconsistencies, and clarify existing amateur rocket regulations.

#### 1. Preserve Safety

The FAA currently receives airspace waiver requests for launches of rockets that can reach 328,000 feet (100 kilometers) or more. These launches are approaching altitudes where they could pose a threat to objects in orbit. The capability of rockets has advanced to a level far greater than contemplated by existing regulation. We believe any rocket launch that could potentially impact United States or international orbital assets should not be classified as an amateur rocket nor exempted from regulation. We propose to restrict amateur rocket activity to address this concern.

A rocket that flies higher can also travel further. Current regulations place no restrictions on range, and unintentionally allow amateur launch activities to expose a foreign country's persons and property to risk. The FAA believes that any rocket launch with potential foreign policy implications should not be classified as an amateur rocket activity nor exempted from regulation. We propose to restrict amateur rocket activity to address this concern.

The FAA has identified a need to receive technical data from operators of large amateur rockets in their initial applications to ensure public safety is maintained. The FAA protects people and property from the dangers of advanced rocket operations by using hazard areas and operating limitations. A hazard area is any region where there is a significant potential for harm from the rocket activity. Access to a hazard area is controlled or monitored by the operator (or by others through agreements) to protect the uninvolved public. To calculate these hazard areas and operational limitations, technical information about the rocket and its

operations is needed. Currently, the waiver application process requires repeated correspondence between the applicant and the FAA to get the necessary information. This iterative process reduces the time available to the FAA to do analyses, and increases the chance of determining either an insufficient or excessive hazard area. Some recent amateur rocket launch attempts to reach 328,000 ft (100 km) have failed resulting in debris landing outside the calculated hazard areas. Hazard areas that are inaccurately defined can pose a risk to the public. The FAA proposes to collect the necessary information from operators of large amateur rockets as part of the waiver application. This would allow us to determine more accurate hazard areas without repeated requests for information.

The amateur rocket regulations were written when the amateur rocket community used mainly solid rocket motors. Since then the amateur rocket community has developed rocket engines that use liquid propellants. We propose to redefine amateur rocket activity to reflect this advanced rocket environment.

In addition, the FAA intends to update its regulations by codifying public safety practices that are already widely used.

## 2. Address Inconsistencies

The current regulations applicable to amateur rocket activities are inconsistent. For example, language in § 101.22(b) restricts operations “\* \* \* within 5 miles of an airport runway \* \* \*” Similar language in § 101.23(c) restricts operations “\* \* \* within five miles of the boundary of any airport.” The FAA proposes to clarify and bring consistency to these regulations.

The current regulations are also inconsistent with current guidance and practice. Section 101.25 is inconsistent with FAA ATC Order 7930.2J, Sec. 4–1–1. The regulation requires that a person give information to FAA Air Traffic Control (ATC) “\* \* \* no less than 24 hours prior to and no more than 48 hours prior to beginning the operation.” However, the FAA Order allows acceptance of the required information “\* \* \* provided the occurrence is no more than 3 days in the future.” The FAA uses this information to create a Notice to Airmen (NOTAM).

In addition, the information currently given to ATC under § 101.25(c) is not precisely what the Air Traffic Organization uses to issue a NOTAM. For example, the size, weight, launch point, and number of rockets are not used to issue a NOTAM. However, the

affected area, the center of its location (which is not always the same as the launch point), and the affected altitudes (from ground to the apogee of the highest-performing rocket) are required to determine boundaries for the NOTAM. By using specific terminology (for example, *affected altitudes* as opposed to *highest altitude*), the FAA would remove ambiguity and make consistent its use of terms.

The FAA’s definition of ballistic coefficient is inconsistent with the industry definition. The definition of ballistic coefficient used currently by the FAA is weight divided by frontal area. However, ballistic coefficient (shown by the Greek letter  $\beta$ ) is commonly defined in the aerospace technical literature as the weight divided by the product of the frontal area and a drag coefficient, such that

$$\beta = \frac{W}{A \cdot C_D}$$

The FAA’s current definition of ballistic coefficient ignores the shape of the rocket’s nose cone (represented mathematically by the drag coefficient  $C_D$ ). This inconsistency with the engineering community makes the existing requirement confusing and ignores the importance of nose cone shape. The FAA proposes changes to its regulations that would address this inconsistency.

## 3. Improve Clarity

Currently, the industry and FAA categorize rockets differently. This is because their categories served different purposes. The details of this are explained in a later section. However, using similar categories would improve clarity.

The amateur rocket regulations are written in multiple unit systems. The FAA prefers a consistent use of unit systems, and would use this rulemaking to denote both English and metric units on all terms.

### C. Categories of Amateur Rockets

Rocket organizations and federal regulatory agencies use different categories and definitions to define amateur rocketry. Industry uses rocket categories to set operating procedures for amateur rocket events and for self-regulation. Likewise, it is important for the FAA to categorize amateur rocket activities into groups because different types of rockets have different effects on public safety.

#### 1. Industry Categorization

Rocket organizations such as the National Association of Rocketry (NAR)

and the Tripoli Rocketry Association (TRA) divide rockets into categories of model, high-power, and experimental.<sup>1</sup> A significant difference among these categories is total impulse. Total impulse is calculated by multiplying the average thrust (propulsive force) of a rocket motor by the total burn time. Total impulse is a good measure of rocket power and is commonly expressed in Newton-seconds (N-sec) or pound-seconds (lb-sec). The rocket organizations classify motors according to total impulse, and categorize them alphabetically, as shown in Table 1. Each category is described below.

TABLE 1.—RANGE OF TOTAL IMPULSE FOR SPECIFIED MOTOR CLASS

Installed total impulse (N-sec)	Equivalent motor class
0–2.50 .....	A
2.51–5.00 .....	B
5.01–10.00 .....	C
10.01–20.00 .....	D
20.01–40.00 .....	E
40.01–80.00 .....	F
80.01–160.00 .....	G
160.01–320.00 .....	H
320.01–640.00 .....	I
640.01–1280.00 .....	J
1280.01–2560.00 .....	K
2560.01–5120.00 .....	L
5120.01–10,240.00 .....	M
10,240.01–20,480.00 .....	N
20,480.01–40,960.00 .....	O
40,960.01–81,920.00 .....	P
81,920.01–163,840.00 .....	Q

Model rockets make up the low-power end of amateur rocket activity, and are comprised of all rocket motors from A through G. Model rockets typically are made of paper, wood, or breakable plastic and contain no substantial metal parts.

High-power rockets are the next level up from model rocketry and encompass rocket motor classes H through O, or 160 to 40,960 N-secs (35.97 to 9208 lb-sec). Some of these vehicles have sophisticated electronics to open parachutes or ignite added stages. Operators of high-power rockets are usually associated with either NAR or

<sup>1</sup> The NAR and the TRA are two major rocket organizations. Each has a safety code to protect its members and the public during rocket activities. The NAR and the TRA safety codes were originally developed from safety codes published by the National Fire Protection Association (NFPA), Batterymarch Park, Quincy, Massachusetts. The NFPA has published two safety codes for rocketry: (1) NFPA 1122, which covers model rocketry, and (2) NFPA 1127, which covers high-power rocketry. NFPA 1127 includes requirements for rocket construction, launch sites and launches, and requirements for rocket motor use including motor testing and certification. All participants in NAR- and TRA-sanctioned launch events promise to follow their respective safety codes.

TRA, and are obliged by their membership to follow the associated safety codes of those organizations.

A rocket using non-certified solid rocket motors, an engine using a liquid oxidizer and fuel, or a solid rocket motor or motors producing more than 81,920 N-sec (18,409 lb-secs) of total impulse have sometimes been labeled experimental by various rocketry organizations. Experimental rocketry is a relatively small part of amateur rocket activities as most hobbyists lack expertise and manufacturing ability to design and build higher-powered solid or liquid rocket engines.

## 2. Current FAA Categorization

Currently, the FAA defines and categorizes unmanned rocketry into three groups: Model rockets, large model rockets, and "Other"—everything within unmanned rocketry that falls outside the first two categories. The FAA distinguishes categories by the weight of propellant used, total weight of the rocket, and the manner in which the rocket is operated.

### Model Rockets

In the applicability section, specifically § 101.1(a)(3)(ii), model rockets are exempt from all remaining part 101 regulations. This is any model rocket that:

- (a) Uses not more than four ounces of propellant;
- (b) Uses a slow-burning propellant;
- (c) Is made of paper, wood, or breakable plastic, and contains no substantial metal parts;
- (d) Weighs not more than 16 ounces, including the propellant; and
- (e) Is operated in a manner that does not create a hazard to persons, property, or other aircraft.

### Large Model Rockets

Large model rockets are defined by the FAA in § 101.22 as model rockets that meet the following conditions:

- (a) Uses not more than 125 grams of propellant;
- (b) Is constructed of paper, wood, or breakable plastic, and contains no substantial metal parts; and
- (c) Weighs not more than 1,500 grams (including propellant).

If the operator of a large model rocket complies with all provisions of § 101.25 (ATC Notice Requirements), then the operator is exempt from § 101.23 (b), (g) and (h). These are the operating restrictions on entering controlled airspace, operating within 1,500 feet of any unassociated person or property, and operating between sunset and sunrise, respectively. An operator is also exempt from § 101.23(c) (operating

within 5 miles of an airport runway) if the operator provides a copy of the notification required by ATC to the airport manager. Finally, if launching into restricted airspace, only § 101.23(g) (1,500 ft setback distance) applies.

*"Other"—Any unmanned rocket that cannot be categorized as a Model Rocket or a Large Model Rocket*

The FAA defines only the two previous categories of rockets under part 101. Nevertheless, all other unmanned rocket activity that falls outside these categories is covered under part 101, and must comply with all operating limitations in § 101.23 and ATC Notice Requirements in § 101.25. The only exception to the operating limitations in §§ 101.23 and 101.25 is if launching into restricted airspace. In this case only the 1,500-foot setback distance in § 101.23(g) for unassociated people and property applies.

## II. Comments from Public Meeting

On February 28, 2000, the FAA began a two-week public forum on the Internet to invite comments and information from the public on regulating launches of small-scale rockets. (At the time, the FAA was considering changing the term amateur to small-scale.) The two-week online forum was followed by two weeks of written comments to a docket. The online public forum was conducted instead of an Advanced Notice of Proposed Rulemaking (ANPRM) or more traditional public meetings. The FAA posed the following questions:

- Does defining amateur rocket activity accurately and adequately exclude from FAA regulatory and licensing scrutiny those activities thought to be either inherently safe, or adequately covered by state, local, or Federal regulation?
- If not, what would be a better definition?
- Should there be a category of launch activity that would not be licensed but would have certain regulatory requirements imposed by the FAA?
- If so, what should those requirements address?

About 35 people took part in the online discussion, which produced over 150 pages of text. Six more comments were received during the written comment period.

The preliminary conclusion of the public online forum was the current definition of amateur rocket activity was inadequate—it did not exclude some activities from FAA regulatory scrutiny

that might be inherently safe.<sup>2</sup> Although several ideas were expressed about what factors should be part of a definition, there was no consensus about what amateur rocket activity should encompass.

The written comments from the public forum are available at <http://dms.dot.gov/>; docket number FAA–1999–6574. To find it, enter the last four digits of the docket number into the search box.

## III. Discussion of the Proposed Regulatory Requirements

The following sections describe in detail the rationale for the proposed regulations. This rationale is intended to serve as a guide and add clarity to the meaning of the regulations. The proposed changes are addressed in numerical order, and each consists of a description of the change followed by the rationale for the change.

### A. Part 1 Definitions and Abbreviations

The FAA proposes to move and change the definition of *amateur rocket activities*. We would move the definition of *amateur rocket activities* from § 401.5 to § 1.1 under the term *amateur rocket*. We would change the definition to read as follows:

An amateur rocket is a rocket that:

- Is propelled by a motor or motors having a combined total impulse of 889,600 N-sec (200,000 lb-sec) or less, and
- Cannot reach an altitude greater than 150 kilometers (93.2 statute miles) above the earth's surface.

Further, we would add the following operating limitations to part 101:

- Is launched on a suborbital trajectory;
- When launched, must not cross into the territory of a foreign country unless there is an international agreement permitting such activity; and
- Is unmanned.

We believe these parameters and operating limitations better reflect those operations that should be exempt from the part 400 licensing or permitting process than the parameters used today. The proposed definition of amateur rocket keeps the same total impulse criterion as in the current definition, discards the criteria of private site, burn time, and ballistic coefficient, and adds an altitude restriction. New operating limitations would require that amateur rocket launches be suborbital, not reach foreign territories, and be unmanned.

<sup>2</sup> The online participants intended the phrase "inherently safe" to mean safe for the public, or adequately covered by state, local or other Federal regulation.

### *Total Impulse*

The FAA proposes to keep the current total impulse limit for amateur rocketry. We would keep the value of 200,000 lb-secs, which converts to 889,600 N-sec, as the cutoff point because it best describes the launch vehicle size, power, performance, and the potential public safety impacts. It has also been used successfully for over 18 years.

### *Maximum Altitude*

The FAA believes that a rocket able to exceed an altitude of 150 km (93.2 miles) would not be an amateur rocket. Therefore, we propose to add this altitude limit to the definition. This would ensure an amateur rocket will not affect manned spacecraft and would virtually ensure that it will not affect any operational satellites. Space shuttle history shows a lowest orbit of 226 km (141.2 miles). The international space station maintains a minimum altitude of 310 km (193.7 miles). Based on our analysis of catalogs of all orbiting objects, there are approximately 9 to 11 active satellites with perigees lower than 150 km. Because there are so few active satellites orbiting below 150 km, the FAA believes allowing amateur rocket launches to reach 150 km does not create an unacceptable hazard. Rocket operations exceeding 150 km could pose a threat to operational spacecraft and should be subject to the licensing or permitting process.

### *Suborbital Trajectory*

The FAA proposes that amateur rocket launches be limited to suborbital trajectories. Although the maximum altitude restriction of 150 km (93.2 miles) should preclude the launch from placing an object into orbit, we want to remove any possibility that an object can reach orbit.

### *Foreign Territory*

The FAA proposes that amateur rockets not be launched in a manner where they could reach foreign territory unless an agreement is in place between the United States and the foreign government. This restriction would eliminate any potential international implications associated with amateur rockets. Rockets with international implications should not be considered amateur nor be exempt from the licensing or permitting process.

### *Unmanned*

The FAA proposes that amateur rockets be unmanned. In 2004, Congress legislatively ordered that manned launches require a license or a permit (Commercial Space Launch Amendments Act). The proposed

requirement ensures compliance with this Act.

### *Burn Time*

The FAA proposes to remove burn time as a criterion for distinguishing amateur rockets from non-amateur rockets. This criterion is inappropriate for two reasons.

First, burn time should no longer be used to determine risk qualitatively because of the introduction into the amateur rocket community of rocket engines that use liquid propellants. When the regulations were originally written, rockets with similar burn times generally had similar designs. The burning rates of solid propellants used by the amateur community (excluding model rockets) did not vary significantly from one propellant to another. Rockets with similar burn times most likely had similar amounts of propellant and potential energy. This is no longer the case. One important difference between rockets that operate using liquid propellants (informally, *liquid rockets*) and rockets that operate using solid propellants (informally, *solid rockets*) is the former can be throttled. Liquid rockets typically have valves for controlling the flow of liquid into the combustion chamber. This allows the operators to regulate their use of propellants as necessary. Because of this flexibility, the burn time of a liquid rocket does not necessarily correspond to its potential energy. This difference argues that burn time should not be used as a criterion to determine the potential safety aspects of a liquid rocket.

The second reason for removing burn time as a criterion is that current regulations unnecessarily drive rocket design. In order to ensure that amateur rockets stay under the burn time limit, and thus remain amateur, while maximizing performance, operators have introduced design elements, such as increased thrust and acceleration that introduce a safety concern. Operators of liquid rockets have faced similar pressures when designing their flight paths, and have often opted for less safe, higher-acceleration burns for the same reasons. Higher accelerations on a rocket can make failures more common, as the stresses involved are larger.

### *Ballistic Coefficient*

The FAA proposes to remove ballistic coefficient as a criterion for several reasons:

1. A rocket with a ballistic coefficient of less than 12 lbs/in<sup>2</sup> can still impact with enough kinetic energy and explosive potential to be dangerous.

Therefore, the restriction does not noticeably contribute to safety.

2. The goal of restricting certain parameters is containment within a specified area to minimize risk to the public. By explicitly restricting the altitude (150 km) and indirectly restricting the range (no foreign territory) of a rocket, we would more directly capture the intended result making the restriction on ballistic coefficient unnecessary.

3. The existing definition of ballistic coefficient used by the FAA is inconsistent with the definition common to the field of aerodynamics. This inconsistency makes the existing requirement confusing and ignores the importance of shape.

### *Private Site*

The FAA proposes to remove from the definition of amateur rocket the requirement to launch from a private site. This is because public safety issues do not depend on this distinction. This restriction unnecessarily burdens both the amateur rocket operator and the FAA.

### *B. Part 101*

#### *1. Section 101.1 Applicability (Subpart A—General)*

The FAA proposes to move the rules governing the operation of model rockets from Subpart A—General (§ 101.1) to Subpart C—Unmanned Rockets (§ 101.21). This proposal would align all definitions and operating requirements pertaining to unmanned rockets in a single subpart. We would continue to allow model rockets to operate without FAA oversight.

#### *2. Section 101.21 Applicability (Subpart C—Unmanned Rockets)*

The FAA proposes to clarify part 101 by adding two new categories of amateur rocket operations and amending the definitions of the existing categories. We propose to number these categories from Class 1 to Class 4. The two new categories would be Class 3 (high-power rocket) and Class 4 (advanced high-power rocket). Class 1 and Class 2 rockets would be defined using the current definitions of model rocket and large model rocket, respectively. The new categories capture amateur rockets that require significant analyses or operational constraints to preserve safety.

#### *Class 1—Model Rockets*

The proposed Class 1-Model Rockets category takes the place of the current model rocket category with roughly the same definition. Class 1 would be defined as an amateur rocket using less

than 125 grams (4.4 ounces) of slow-burning propellant, made primarily of paper, wood, or breakable plastic, containing no substantial metal parts, and weighing no more than 454 grams (16 ounces), including the propellant. This definition differs from the existing definition in two ways—maximum propellant weight and operating limitations.

The maximum propellant weight would be increased from the existing 4 ounces to 4.4 ounces, and metric units would also be included in the regulatory text. This change would be made to close the gap in propellant weight between Class 1 and Class 2 rockets. The small increase in maximum propellant weight would not pose an increased risk to the public.

The existing definition also contains an operating limitation. A model rocket is defined as a rocket “operated in a manner that does not create a hazard to persons, property, or other aircraft.” However, definitions that include operating limitations can be confusing. For example, a model rocket is a model rocket whether it is operated safely or not. We would keep the operating

limitation, but would move it outside the categorical definition.

#### *Class 2—Large Model Rockets*

The proposed definition of Class 2—Large Model Rockets would, like Class 1, move the operating restrictions from the definition to another area of the regulations. With this change, proposed Class 2 would only differ from Class 1 in maximum total weight. Class 2 would continue to allow up to 1,500 grams (53 ounces), including propellant, in contrast to 454 grams (16 ounces) allowed by Class 1.

#### *Class 3—High-Power Rockets*

The FAA proposes to add the term Class 3—High-Power Rockets, which would be defined as an amateur rocket other than a model rocket or large model rocket that is propelled by a motor or motors having a combined total impulse of 163,840 N-sec (36,818 lb-sec) or less. In terms of motor class, this is either a P or a Q motor.

The FAA proposes to use total impulse as the distinguishing criterion for high-power rockets because total impulse is a good measure of the size, power, and performance of the rocket.

Each of these factors is important for public safety. We propose the total impulse limit because rockets of this size have not required extensive analyses in the past to be launched safely.

#### *Class 4—Advanced High-Power Rockets*

The FAA proposes to add the term Class 4—Advanced High-Power Rockets, which would be any amateur rocket that cannot meet one of the other three Classes. In general, these will be rockets with a combined total impulse above 163,840 N-sec (36,818 lb-sec), that is, a Q-motor. However, the regulation would be written such that other, unforeseen operations or advancements in amateur rocket technology will be captured as Class 4.

The risk to the public from launches of this category is often higher due to the large amount of propellant or stored energy within the vehicle. This higher risk factor requires greater scrutiny. As proposed, the Class 4 captures rockets more powerful than those commonly launched at high-power rocket events.

Table 2 summarizes the proposed amateur rocket categories.

TABLE 2.—PROPOSED AMATEUR ROCKET CATEGORIES

#### Amateur Rocket:

- Is propelled by a rocket motor or motors having a combined nominal total impulse of 889,600 N-sec (200,000 lb-sec) or less.
- Cannot reach an altitude of greater than 150 kilometers (492,120 feet).
- Must not be launched so that it could reach the territory of a foreign country unless there is an international agreement permitting such activity.
- Is launched on a suborbital trajectory.
- Is unmanned.

The following categories are recognized currently under part 101 and are kept unchanged:<sup>3</sup>

#### Class 1—Model Rockets:

- 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.
- Weighs no more than 454 grams (16 ounces), including the propellant.

#### Class 2—Large Model Rockets:

- 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.
- Weighs no more than 1,500 grams (53 ounces) including propellant.

The following are the proposed added sub-categories for Part 101:

#### Class 3—High-Power Rockets:

- A rocket other than a Class 1 or Class 2, propelled by a rocket motor or motors having a combined total impulse of 163,840 N-sec (36,818 lb-sec) or less.

#### Class 4—Advanced High-Power Rockets:

- Any amateur rocket other than a Class 1, 2, or 3.

<sup>3</sup> There is a very minor change to the definition of Class 1—Model Rockets. The maximum propellant weight is increased from 4 ounces to 4.4 ounces.

#### *Other Changes to § 101.21*

The FAA also proposes to revise § 101.21 so that it will reference 14 CFR chapter III, the commercial space transportation regulations for licensed or permitted launches. Proposed § 101.21 would state that a person

operating an unmanned rocket other than an amateur rocket must comply with 14 CFR Chapter III. This change is proposed to alert new operators to existing regulatory requirements.

#### 3. Operating Limitations

As previously stated, the FAA currently combines operating limitations for model rockets and large model rockets within their respective definitions. The FAA proposes to separate operating limitations from the

rocket definitions. Each rocket class will have a separate section under part 101 addressing the operating limitations for that class. Operating limitations will be addressed in a tiered approach with the limitations for each rocket class building on top of the previous rocket class. The proposed operating limitations are described below in the order they would appear in part 101.

Rockets within all classes would have the following operating limitations:

- Must be launched on a suborbital trajectory;
- Must not cross into the territory of a foreign country unless there is an international agreement permitting such activity; and
- Must be unmanned.

#### *Operating Limitations for Class 1—Model Rockets*

The proposed operating limitations for Class 1—Model Rockets would not differ from the current operating limitations. A model rocket must still be “operated in a manner that does not create a hazard to persons, property, or other aircraft.”

#### *Operating Limitations for Class 2—Large Model Rockets*

The proposed operating limitations for Class 2—Large Model Rockets would differ only slightly from the current limitations. The phrase “airport runway

or other landing area” would change to “airport boundary.” This change would be made for consistency. Further, current operating limitations for large model rockets, which can be found in §§ 101.22 and 101.23, would be consolidated into a single section for clarity.

#### *Operating Limitations for Class 3—High-Power Rockets*

The proposed rule places new operating limitations on Class 3—High-Power Rockets. Currently, rockets that would be Class 3 operate under the provisions for Large Model Rockets. These limitations remain unchanged, and two more limitations codifying current practice would be added.

The first of the new limitations would be that a person at least eighteen years old must be present and in charge of ensuring the safety of the operation. This has been common practice, but it is important to codify the best practices to ensure they are preserved.

The second new limitation would require reasonable precautions to report and control a fire. It is prudent and important that operators understand and mitigate the safety hazards of their rockets, including fire. Operators should have a means of controlling small fires (such as brush fires caused by motor ignition) without putting themselves at risk. Operators should also be able to

report promptly to a local fire department the location of any fire that they cannot control. This is also current practice that we would codify with this rulemaking.

#### *Operating Limitations for Class 4—Advanced High-Power Rockets*

In addition to the General Operating Limitations of proposed § 101.22 and the operating limitations contained in proposed § 101.25, the FAA may specify operating limitations necessary to ensure that air traffic is not adversely affected and public safety is not jeopardized. As discussed earlier, the proposal is intended to address unforeseen operations or advancements in amateur rocket technology.

#### 4. Section 101.27 Notice Requirements

The notice requirements that are currently in § 101.25 would be moved to § 101.27 and updated by this rulemaking. While the notification requirements would be similar to the current requirements, the terminology would more closely match current practice, and would help prevent miscommunication between a rocket operator and a local air traffic controller. Tables 3 and 4 show the current and proposed notification requirements.

In Table 3, Classes 2, 3 & 4 are all included under Large Model Rockets.

TABLE 3.—CURRENT ATC NOTICE REQUIREMENTS FOR AMATEUR ROCKET LAUNCHES

	Model rockets	Large model rockets
Required Information:		
Operator information (name, address, etc.) .....	.....	X
Number of rockets .....	.....	X
Size and weight of each rocket .....	.....	X
Highest altitudes (MSL) .....	.....	X
Location of launch (Lat & Long) .....	.....	X
Date, time and duration of launch .....	.....	X
Other information requested by the FAA .....	.....	X

TABLE 4.—PROPOSED ATC NOTICE REQUIREMENTS FOR AMATEUR ROCKET LAUNCHES

	Class 1— model rockets	Class 2— large model rockets	Class 3— high-power rockets	Class 4— advanced high-power rockets
Required Information:				
Operator information (name, address, etc.) .....	.....	X	X	X
Affected altitudes (MSL) .....	.....	X	X	X
Location of launch (Lat & Long) .....	.....	X	X	X
Date, time and duration of launch .....	.....	X	X	X
Other information requested by the FAA .....	.....	X	X	X
Location of the center of the affected area in latitude and longitude .....	.....	.....	X	X

#### *NOTAM Submission Timeline*

The FAA proposes to change the submission timeline requirements to

match current practice and guidance. Currently, § 101.25 requires ATC notification to be given to the nearest

FAA ATC “no less than 24 hours and no more than 48 hours prior to beginning the operation.” The FAA

proposes to change this timeline to “no less than 24 hours before and no more than 3 days before beginning the operation.” This change would make FAA regulations consistent with current guidance as documented in ATC Order 7930.2J, Sec. 4–1–1, and with current practice.

#### 5. Section 101.29 Information Requirements

Currently, an operator wishing to launch a rocket into controlled airspace files Form 7711–2 before the operation to request authorization. The FAA uses the information submitted on this form to calculate hazard areas and operating restrictions, and to impose terms and conditions that preserve an adequate

level of safety for the public. This rulemaking proposes to codify the current information gathering process for larger amateur rockets (Classes 3 and 4). This will allow the level of risk to the public to be managed adequately as the activity grows. By codifying the required information, the safety process would become more standardized and streamlined. This, in turn, would improve safety and facilitate the activity by establishing clear regulatory paths.

For a Class 3 or Class 4 rocket operation, a person would complete FAA Form 7711–2 and send it (in triplicate) to the FAA so that it is received at least 45 days before the proposed operation. The minimum

amount of time the FAA needs to process and evaluate the public safety implications of a launch is 45 days. An amateur rocket with advanced technology or other complicated systems could take more time to evaluate. Therefore, we encourage persons who plan to launch such rockets to contact the FAA as early as practical.

Due to the low risk posed by Class 1—Model Rockets, operators of this class rocket would continue to be exempt from information requirements. The information requirements for Class 2—Large Model Rockets would remain the same. Table 5 summarizes the proposed information requirements.

TABLE 5.—PROPOSED INFORMATION FOR SUBMISSION TO THE FAA

	Unmanned rockets				
	Amateur rocket classes				Other—government and FAA-licensed launches
	Class 1—model rockets	Class 2—large model rockets	Class 3—high-power rockets	Class 4—advance high-power rockets	
<b>Notice requirements</b> .....	.....	•	•	•	•
Operator: Name(s) and Address(es) .....	.....	•	•	•	•
Affected altitudes [formerly Highest Altitude] .....	.....	•	•	•	•
Affected Area and location of center [formerly Location of launch] .....	.....	•	•	•	•
Date/time/duration .....	.....	•	•	•	•
Other pertinent information requested by the FAA .....	.....	•	•	•	•
<b>Additional Information Requirements</b> .....	None .....	None .....	Additional below. 45 days .....	Additional below. 45 days .....	None.
Submission of Form 7711–2 (time before event) .....	Not required	Not required	45 days .....	45 days .....	45 days.
Estimated number of rockets in each total impulse class .....	.....	.....	•	•	
Type of propulsion, fuel(s), oxidizer(s), manufacturer, and certification, if any. ....	.....	.....	•	•	
Description of launcher(s) planned to be used, including any airborne platform(s). ....	.....	.....	•	•	
Description of recovery system .....	.....	.....	•	•	
Description of how applicant will meet operating limitations of § 101.25 .....	.....	.....	•	•	
Highest altitude, above ground level, expected to be reached .....	.....	.....	•	•	
Launch site latitude, longitude, and elevation .....	.....	.....	•	•	
Any additional safety procedures that will be followed .....	.....	.....	•	•	
Maximum possible range .....	.....	.....	.....	•	
Dynamic stability characteristics for the entire flight profile .....	.....	.....	.....	•	
Description of all major rocket systems .....	.....	.....	.....	•	
Description of other support equipment necessary for safe operation ....	.....	.....	.....	•	
Planned flight profile and sequence of events .....	.....	.....	.....	•	
All nominal impact areas within three standard deviations .....	.....	.....	.....	•	
Launch commit criteria .....	.....	.....	.....	•	
Countdown procedures .....	.....	.....	.....	•	
Description of how applicant will meet operating limitations of § 101.26 .....	.....	.....	.....	•	
Mishap procedures .....	.....	.....	.....	•	

The FAA only proposes to codify current reporting practices for the new categories of Class 3 and Class 4 rockets. An operator of a Class 4 rocket would have to conduct technical analyses to get some of the required information. These analyses demand more technical knowledge than the simpler information requirements of Class 3 rockets. The FAA believes that this is an appropriate requirement because of the risk to the

public that these advanced rockets can pose.

Any applicant proposing to launch above 7,620 meters (25,000 feet) above ground level, is encouraged to follow the FAA guidance document, “Supplemental Application Guidance for Unguided Suborbital Launch Vehicles, August 1998,” available at [http://www.faa.gov/about/office\\_org/headquarters\\_offices/ast/](http://www.faa.gov/about/office_org/headquarters_offices/ast/)

[licenses\\_permits/launch\\_reentry/reusable/safety/guidelines/sag\\_uslv/](#).

Following the guidance provided in this document will help the FAA determine suitable terms and conditions to attach to a part 101 waiver, and will help streamline the approval process.

Operators falling under the “Other” category (government-conducted and FAA-licensed launches) would continue to file the same data they currently enter



on Form 7711-2. The FAA would rely on the established safety processes to capture and evaluate the safety of this kind of launch.

#### C. Proposed Changes to Chapter III

Existing §§ 400.2, 401.5 and 420.3 would be modified to accommodate the new regulatory structure proposed.

##### 1. Section 400.2 Scope

The proposed change to § 400.2 is to replace “amateur rocket activities” with “activities of amateur rockets, as defined in 14 CFR § 1.1.” This change is necessary because of adding the definition of *amateur rocket* to § 1.1 and the proposed changes mentioned below.

##### 2. Section 401.5 Definitions

Section 401.5 would be amended by deleting the definition “amateur rocket activities,” because it is proposed to be defined in 14 CFR part 1.

##### 3. Section 420.3 Applicability

Existing § 420.3 would be modified to reference the definition of amateur rocket activities in part 1 instead of § 401.5.

#### IV. Paperwork Reduction Act

Information collection requirements associated with this NPRM have been approved previously by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) and have been assigned OMB Control Number 2120-0027.

#### V. International Compatibility

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to comply with International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. The FAA has determined that there are no ICAO Standards and Recommended Practices that correspond to these proposed regulations.

#### VI. Regulatory Evaluation, Regulatory Flexibility Determination, International Trade Impact Assessment, and Unfunded Mandates Assessment

Changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 (Pub. L. 96-354) requires agencies to analyze the economic impact of regulatory changes on small

entities. Third, the Trade Agreements Act (Pub. L. 96-39) prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United States. In developing U.S. standards, the Trade Act requires agencies to consider international standards and, where appropriate, that they be the basis of U.S. standards. Fourth, the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4) requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector, of \$100 million or more annually (adjusted for inflation with base year of 1995).

This portion of the preamble summarizes the FAA’s analysis of the economic impacts of this proposed rule.

Department of Transportation Order DOT 2100.5 prescribes policies and procedures for simplification, analysis, and review of regulations. If the expected cost impact is so minimal that a proposed or final rule does not warrant a full evaluation, this order permits that a statement to that effect and the basis for it be included in the preamble if a full regulatory evaluation of the cost and benefits is not prepared. Such a determination has been made for this proposed rule. The reasoning for this determination is explained below.

The proposed rule defines four classes of amateur rockets that essentially incorporate the existing classifications. Therefore, no additional costs are expected as a result of the new classifications.

These proposed definitions reflect current industry practice. A positive effect of the proposed new classifications and definitions is that they allow for the unlicensed launching of liquid rockets at their optimum burn rates. Today, someone who wanted to launch a liquid rocket at its optimum burn rate would have to obtain a license that requires complicated analyses that can cost up to \$100,000. An alternative would be to adjust the burn rate of the proposed liquid rocket to meet the current requirements. This alternative would result in either reduced rocket performance or reduced rocket safety. Therefore, the proposed rule provides both potential cost savings and performance and safety improvements.

The remaining provisions of the proposed rule primarily update the existing rules to reflect current industry practice and streamline the FAA data collection process. The proposed rule would clarify the required information that is currently provided to the FAA

before a launch in a paper form. This information submittal would result in saving time for launchers and for the FAA as we currently collect some of this information by telephone before a launch.

The proposed rule would have virtually no impact upon the proposed Class 1 and 2 rockets. These classes would continue to operate essentially the same as they did before the proposed rule. The information requirements discussed above apply primarily to the proposed Class 3—High-Power Rocket and Class 4—Advanced High-Power Rockets categories. However, much of this data is already required to be provided to the FAA before a proposed launch. In many cases, the FAA calls the launch operator before the proposed launch and requests additional information. Therefore, the proposed rule does not increase the information required for a proposed launch, but rather formalizes and streamlines the process of providing the information to the FAA prior to the launch. Therefore, the FAA estimates that any incremental costs associated with this proposed rule would be minimal.

An example of the potential effects of the proposed rule is provided by a launch proposed by Montana State University in 2006. The University proposed the launch under the existing rules.<sup>4</sup> However, because the existing application form did not specify all the information needed by the FAA, we requested the remaining information by telephone. Under the proposed rule, their launch would be categorized as a Class 3 launch. The revised form for the University would specifically list all of the necessary information. This form would streamline and speed up the application process for both the University and the FAA.<sup>5</sup> The proposed rule would have a similar effect upon proposed class 4 launches.

The proposed rule provides benefits. As listed below, this proposed rule would:

- Proactively preserve the existing high safety level of amateur rocket activities;
- Update the Federal Aviation Regulations to reflect current industry standards and procedures;
- Eliminate inconsistencies in the existing rules;
- Provide new definitions of amateur rocket categories that would allow amateur rocketeers to more easily

<sup>4</sup> The University submitted an application with the basic information required to the FAA.

<sup>5</sup> Their proposed launch occurred in 2006.

determine what, if any, regulations they would have to comply with;

- Allow unlicensed launches of liquid rockets at optimum performance levels;
- Streamline and clarify the data collection process in cases where a proposed launch would require that the launches proposer provide data to the FAA;
- Insure that amateur rocket activities would be conducted in accordance with all international treaties;
- Insure that amateur rocket activities would not interfere with objects in orbit.

U.S. amateur rocketeers may receive cost savings by clarifications in the FAA requirements for amateur rocket activities. The proposed clarifications should make it quicker and easier for launch applicants to provide the needed information to the FAA. The FAA is likely also to incur cost savings because of this. The FAA, however, has not attempted to quantify the cost savings that may accrue due to this specific proposed rule.

The expected outcome of the proposed rule would be a minimal cost impact with positive net benefits. The FAA requests comments with supporting justification about the FAA determination of minimal impact.

Based on the minimal cost finding the FAA has, therefore, determined that this proposed rule is not a "significant regulatory action" as defined in section 3(f) of Executive Order 12866, and is not "significant" as defined in DOT's Regulatory Policies and Procedures.

#### *A. Regulatory Flexibility Determination*

The Regulatory Flexibility Act of 1980 (Pub. L. 96-354) (RFA) establishes "as a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration." The RFA covers a wide-range of small entities, including small businesses, not-for-profit organizations, and small governmental jurisdictions.

Agencies must perform a review to determine whether a rule will have a significant economic impact on a substantial number of small entities. If the agency determines that it will, the agency must prepare a regulatory flexibility analysis as described in the RFA.

However, if an agency determines that a rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the RFA provides that the head of the agency may so certify and a regulatory flexibility analysis is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

The FAA believes that this proposed rule would not have a significant economic impact on a substantial number of small entities. The proposed rule would affect a large number of small entities. These small entities would include the individuals, organizations, and firms involved in launching amateur rockets. However, although the proposed rule would affect a large number of small entities, the impact of the proposed rule is expected to be minimal. The proposed rule would have virtually no impact upon the proposed Class 1 and 2 rockets. These classes would continue to operate essentially the same as they did before the proposed rule. The proposed rule would have some effect on the proposed Class 3 and 4 rockets. However, the major effect is expected to be a change in the way that pre-launch information is provided to the FAA. The proposed procedures are expected to reduce application approvals and therefore lower costs for launchers of Class 3 and Class 4 rockets.

Therefore the FAA certifies that this proposed rule would not have a significant economic impact on a substantial number of small entities. The FAA solicits comments, with supporting data, regarding this determination.

#### *B. International Trade Impact Assessment*

The Trade Agreements Act of 1979 (Pub. L. 96-39) prohibits Federal agencies from establishing any standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Legitimate domestic objectives, such as safety, are not considered unnecessary obstacles. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards.

The proposed rule would not have an impact on international trade because it applies only to launches conducted in the United States. The proposed rule would, however, insure compliance with all international treaties with respect to space and amateur rocket launches would be complied with. The

FAA has assessed the potential effect of this proposed rule and has determined that it would have only a domestic impact and therefore no effect on international trade.

#### *C. Unfunded Mandates Assessment*

Title II of the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4) requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate in a proposed or final agency rule that may result in an expenditure of \$100 million or more (adjusted annually for inflation with the base year 1995) in any one year by State, local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a "significant regulatory action." The FAA currently uses an inflation-adjusted value of \$128.1 million in lieu of \$100 million.

This proposed rule does not contain such a mandate. The requirements of Title II do not apply.

#### **VII. Executive Order 13132, Federalism**

The FAA has analyzed this proposed rule under the principles and criteria of Executive Order 13132, Federalism. We determined that this action would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government, and, therefore, would not have federalism implications.

#### **VIII. Environmental Analysis**

FAA Order 1050.1E identifies FAA actions that are categorically excluded from preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act in the absence of extraordinary circumstances. The FAA has determined this proposed rulemaking action qualifies for the categorical exclusion identified in paragraph 312f and involves no extraordinary circumstances.

#### **IX. Regulations That Significantly Affect Energy Supply, Distribution, or Use**

The FAA has analyzed this NPRM under Executive Order 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use (May 18, 2001). We have determined that it is not a "significant energy action" under the executive order because it is not a "significant regulatory action" under Executive Order 12866, and it is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

## X. Additional Information

### A. Comments Invited

The FAA invites interested persons to participate in this rulemaking by submitting written comments, data, or views. We also invite comments relating to the economic, environmental, energy, or federalism impacts that might result from adopting the proposals in this document. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. We ask that you send us two copies of written comments.

We will file in the docket all comments we receive, as well as a report summarizing each substantive public contact with FAA personnel concerning this proposed rulemaking. The docket is available for public inspection before and after the comment closing date. If you wish to review the docket in person, go to the address in the **ADDRESSES** section, which appears at the end of this preamble, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. You may also review the docket using the Internet at the web address in the **ADDRESSES** section.

**Privacy Act:** Using the search function of our docket Web site, anyone can find and read the comments received into any of our dockets, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (65 FR 19477–78) or you may visit <http://dms.dot.gov>.

Before acting on this proposal, we will consider all comments we receive on or before the closing date for comments. We will consider comments filed late if it is possible to do so without incurring expense or delay. We may change this proposal in light of the comments we receive.

If you want the FAA to acknowledge receipt of your comments on this proposal, include with your comments a pre-addressed, stamped postcard on which the docket number appears. We will stamp the date on the postcard and mail it to you.

### B. Addresses

You may send comments identified by Docket Number FAA–2007–27310 using any of the following methods:

- **DOT Docket Web site:** Go to <http://dms.dot.gov> and follow the instructions for sending your comments electronically.

- **Government-wide rulemaking Web site:** Go to <http://www.regulations.gov> and follow the instructions for sending your comments electronically.

- **Mail:** Docket Management Facility; U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL–401, Washington, DC 20590–0001.

- **Fax:** 1–202–493–2251.

- **Hand Delivery:** Room PL–401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

**Privacy:** We will post all comments we receive, without change, to <http://dms.dot.gov>, including any personal information you provide. For more information, see the Privacy Act discussion under the Comments Invited section.

**Docket:** To read background documents or comments received, go to <http://dms.dot.gov> at any time or to Room PL–401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

### C. Availability of Rulemaking Documents

You can get an electronic copy of rulemaking documents using the Internet by—

Searching the Department of Transportation's electronic Docket Management System (DMS) Web page (<http://dms.dot.gov/search>);

Visiting the FAA's Regulations and Policies Web page at [http://www.faa.gov/regulations\\_policies/](http://www.faa.gov/regulations_policies/); or

Accessing the Government Printing Office's Web page at <http://www.gpoaccess.gov/fr/index.html>.

You can also get a copy by sending a request to the Federal Aviation Administration, Office of Rulemaking, ARM–1, 800 Independence Avenue SW., Washington, DC 20591, or by calling (202) 267–9680. Make sure to identify the docket number, notice number, or amendment number of this rulemaking.

You may access all documents the FAA considered in developing this proposed rule, including economic analyses and technical reports, from the internet through the Department of Transportation's DMS referenced in paragraph (1).

### List of Subjects in 14 CFR Parts 1, 101, 400, and 401

Aircraft, Aviation safety, Life-limited parts, Reporting and recordkeeping requirements.

## The Proposed Amendment

In consideration of the foregoing, the Federal Aviation Administration proposes to amend parts 1, 101, 400, 401, and 420 of Title 14, Code of Federal Regulations, as follows:

### PART 1—DEFINITIONS AND ABBREVIATIONS

1. The authority citation for part 1 continues to read as follows:

**Authority:** 49 U.S.C. 106(g), 40113, 44701.

2. Add in alphabetical order the following definition for “amateur rocket” to § 1.1:

#### § 1.1 General definitions.

*Amateur rocket* means an unmanned rocket that:

- (1) Is propelled by a motor or motors having a combined total impulse of 889,600 Newton-seconds (200,000 pound-seconds) or less; and
- (2) Cannot reach an altitude greater than 150 kilometers (93.2 statute miles) above the earth's surface.

### PART 101—MOORED BALLOONS, KITES, UNMANNED ROCKETS AND UNMANNED FREE BALLOONS

3. The authority citation for part 101 continues to read as follows:

**Authority:** 49 U.S.C. 106(g), 40103, 40113–40114, 45302, 44502, 44514, 44701–44702, 44721, 46308.

4. Amend § 101.1 by revising paragraph (a)(3) to read as follows:

#### § 101.1 Applicability.

- (a) \* \* \*
- (3) Any unmanned rocket except aerial firework displays.

\* \* \* \* \*

5. Revise § 101.21 to read as follows:

#### § 101.21 Applicability and definitions.

(a) This subpart applies to operating unmanned rockets. However, a person operating an unmanned rocket within a restricted area must comply only with § 101.25(d) and with any additional limitations imposed by the using or controlling agency.

(b) A person operating an unmanned rocket other than an amateur rocket as defined in § 1.1 must comply with 14 CFR Chapter III.

(c) The following definitions apply to this subpart:

- (1) *Class 1—Model rocket* means an amateur rocket that:
  - (i) Uses no more than 125 grams (4.4 ounces) of propellant;
  - (ii) Uses a slow-burning propellant;
  - (iii) Is made of paper, wood, or breakable plastic;
  - (iv) Contains no substantial metal parts; and

(v) Weighs no more than 454 grams (16 ounces), including the propellant.

(2) *Class 2—Large model rocket* means an amateur rocket other than a model rocket, that:

(i) Uses no more than 125 grams (4.4 ounces) of propellant;

(ii) Uses a slow-burning propellant;

(iii) Is made of paper, wood, or breakable plastic;

(iv) Contains no substantial metal parts; and

(v) Weighs no more than 1,500 grams (53 ounces), including the propellant.

(3) *Class 3—High-power rocket* means an amateur rocket other than a model rocket or large model rocket that is propelled by a motor or motors having a combined total impulse of 163,840 Newton-seconds (36,818 pound-seconds) or less.

(4) *Class 4—Advanced high-power rocket* means an amateur rocket other than a model rocket, large model rocket, or high-power rocket.

6. Revise § 101.22 to read as follows:

**§ 101.22 General operating limitations.**

(a) An amateur rocket must be operated in such a manner that it:

(1) Is launched on a suborbital trajectory;

(2) When launched, must not cross into the territory of a foreign country unless an agreement is in place between the United States and the country of concern; and

(3) Is unmanned.

(b) The FAA may specify additional operating limitations necessary to ensure that air traffic is not adversely affected, and public safety is not jeopardized.

7. Revise 101.23 to read as follows:

**§ 101.23 Operating Limitations for Class 1—Model Rockets.**

In addition to the General Operating Limitations of § 101.22, persons operating a Class 1—Model Rocket must operate the rocket in a manner that does not create a hazard to persons, property, or other aircraft.

8. Add § 101.24 to Subpart C to read as follows:

**§ 101.24 Operating Limitations for Class 2—Large Model Rockets.**

In addition to the General Operating Limitations of § 101.22, no person may operate a Class 2—Large Model Rocket—

(a) In a manner that creates a hazard to persons, property, or other aircraft;

(b) At any altitude where clouds or obscuring phenomena of more than five-tenths coverage prevails;

(c) At any altitude where the horizontal visibility is less than five miles; and

(d) Into any cloud;

(e) Unless that person complies with § 101.27; and,

(f) Within 8 kilometers (5 miles) of any airport boundary unless the information required in § 101.27 is provided to the manager of the airport.

9. Revise § 101.25 to read as follows:

**§ 101.25 Operating Limitations for Class 3—High Power Rockets.**

In addition to the General Operating Limitations of § 101.22, no person may operate a Class 3—High-Power Rocket—

(a) Unless that person complies with § 101.24 except paragraph (f);

(b) Within 8 kilometers (5 miles) of any airport boundary;

(c) In controlled airspace without prior authorization from the FAA in accordance with § 101.29(a) of this part;

(d) Within 457 meters (1,500 feet) of any person or property that is not associated with the operations;

(e) Between sunset and sunrise;

(f) 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; and

(g) Unless reasonable precautions are provided to report and control a fire caused by rocket activity.

10. Add new § 101.26 to Subpart C to read as follows:

**§ 101.26 Operating Limitations for Class 4—Advanced High Power Rockets.**

In addition to the General Operating Limitations of § 101.22 and the operating limitations contained in § 101.25 of this part, the FAA may specify other operating limitations for Class 4—Advanced High Power Rockets necessary to ensure that air traffic is not adversely affected, and public safety is not jeopardized.

11. Add § 101.27 to Subpart C to read as follows:

**§ 101.27 Notice requirements.**

*ATC notification for all launches.* No person may operate an unmanned rocket other than a Class 1—Model Rocket unless that person gives the following information to the FAA ATC facility nearest to the place of intended operation no less than 24 hours before and no more than three days before beginning the operation:

(a) The names and addresses of the operators; except when there are multiple participants at a single event, the name and address of the person so designated as the event launch coordinator, whose duties include coordination of the required launch data estimates and coordinating the launch event;

(b) Date/time the activity will begin;

(c) Size of the affected area in a nautical mile radius;

(d) Location of the center of the affected area in latitude and longitude coordinates;

(e) Highest affected altitude;

(f) Duration of the activity;

(g) Any other pertinent information requested by the ATC facility.

12. Add § 101.29 to Subpart D to read as follows:

**§ 101.29 Information requirements.**

(a) *Information requirements for operating Class 3—High-Power Rockets.* A person operating one or more Class 3—High Power Rockets in controlled airspace must provide the information below on each rocket to the FAA at least 45 days before the proposed operation. The FAA may request additional information if necessary to ensure the proposed operations can be safely conducted. The information shall include:

(1) Estimated number of rockets to be operated in each class,

(2) Type of propulsion, fuel(s), oxidizer(s), manufacturer, and certification, if any,

(3) Description of the launcher(s) planned to be used, including any airborne platform(s),

(4) Description of recovery system,

(5) Description of how applicant will meet § 101.25 (Operating Limitations for Class 3—High Power Rockets).

(6) Highest altitude, above ground level, expected to be reached,

(7) Launch site latitude, longitude, and elevation.

(8) Any additional safety procedures that will be followed.

(b) *Information requirements for operating Class 4—Advanced High-Power Rockets.* A person operating one or more Class 4—Advanced High-Power Rockets in controlled airspace must provide the information below for each rocket to the FAA at least 45 days before the proposed operation. The FAA may request additional information if necessary to ensure the proposed operations can be safely conducted. The information shall include:

(1) The information requirements of paragraph (a) of this section.

(2) Maximum possible range,

(3) The dynamic stability characteristics for the entire flight profile,

(4) A description of all major rocket systems, including structural, pneumatic, propellant, propulsion, ignition, electrical, avionics, recovery, wind-weighting, flight control, and tracking,

(5) A description of other support equipment necessary for a safe operation,

(6) The planned flight profile and sequence of events,

(7) All nominal impact areas, including those for any spent motors and other discarded hardware, within three standard deviations of the mean impact point,

(8) Launch commit criteria,

(9) Countdown procedures,

(10) A description of how the applicant will meet § 101.26 (Operating Limitations for Class 4—Advanced High Power Rockets), and

(11) Mishap procedures.

#### PART 400—BASIS AND SCOPE

13. The authority citation for part 400 continues to read as follows:

**Authority:** 49 U.S.C. 70101–70121.

14. Revise § 400.2 to read as follows:

##### § 400.2 Scope.

These regulations set forth the procedures and requirements applicable to the authorization and supervision under 49 U.S.C. Subtitle IX, chapter 701, of commercial space transportation activities conducted in the United States or by a U.S. citizen. The regulations in this chapter do not apply to activities of amateur rockets, as defined in 14 CFR 1.1, or to space activities carried out by the United States Government on behalf of the United States Government.

#### PART 401—ORGANIZATION AND DEFINITIONS

15. The authority citation for part 401 continues to read as follows:

**Authority:** 49 U.S.C. 70101–70121.

##### § 401.5 [Amended]

16. Amend § 401.5 by removing the term *Amateur rocket activities* and its definition.

#### PART 420—LICENSE TO OPERATE A LAUNCH SITE

17. The authority citation for part 420 continues to read as follows:

**Authority:** 49 U.S.C. 70101–70121.

18. Revise § 420.3 to read as follows:

##### § 420.3 Applicability.

This part applies to any person seeking a license to operate a launch site or to a person licensed under this part. A person operating a site that only supports amateur rocket activities as defined in 14 CFR 1.1, does not need a license under this part to operate the site.

Issued in Washington, DC on June 5, 2007.

**Patricia G. Smith,**

*Associate Administrator for Commercial Space Transportation.*

[FR Doc. E7–11263 Filed 6–13–07; 8:45 am]

**BILLING CODE 4910–13–P**

## DEPARTMENT OF THE TREASURY

### Internal Revenue Service

#### 26 CFR Part 1

[REG–144540–06]

RIN 1545–BG03

#### Built-in Gains and Losses Under Section 382(h)

**AGENCY:** Internal Revenue Service (IRS), Treasury.

**ACTION:** Notice of proposed rule making by cross-reference to temporary regulations.

**SUMMARY:** In the Rules and Regulations section of this issue of the **Federal Register**, the IRS is issuing temporary regulations that apply to corporations that have undergone ownership changes within the meaning of section 382. These regulations provide guidance on the treatment of prepaid income under the built-in gain provisions of section 382(h). The text of the temporary regulations published in this issue of the **Federal Register** serves as the text of these proposed regulations.

**DATES:** Written or electronic comments and requests for a public hearing must be received by September 12, 2007.

**ADDRESSES:** Send submissions to: CC:PA:LPD:PR (REG–144540–06), Room 5203, Internal Revenue Service, PO Box 7604, Ben Franklin Station, Washington, DC 20044. Submissions may be hand-delivered Monday through Friday between the hours of 8 a.m. and 4 p.m. to CC:PA:LPD:PR (REG–144540–06), Courier's Desk, Internal Revenue Service, 1111 Constitution Avenue, NW., Washington, DC; or sent electronically, via the Federal eRulemaking Portal at <http://www.regulations.gov> (IRS REG–144540–06).

**FOR FURTHER INFORMATION CONTACT:** Concerning the proposed regulations, Keith Stanley, (202) 622–7750; concerning submission of comments, the hearing, and/or to be placed on the building access list to attend the hearing, Richard Hurst, at (202) 622–2949 (TDD Telephone) (not toll free numbers) and his e-mail address is [Richard.A.Hurst@irscounsel.treas.gov](mailto:Richard.A.Hurst@irscounsel.treas.gov).

**SUPPLEMENTARY INFORMATION:**

## Background and Explanation of Provisions

Temporary regulations in the Rules and Regulations section of this issue of the **Federal Register** amend the Income Tax Regulations (26 CFR part 1) relating to section 382 of the Code. The text of the temporary regulations also serves as the text of these proposed regulations. The preamble to the temporary regulations explains the amendments.

## Special Analyses

It has been determined that this notice of proposed rulemaking is not a significant regulatory action as defined in Executive Order 12866. Therefore, a regulatory assessment is not required. It is hereby certified that these proposed regulations will not have a significant economic impact on a substantial number of small entities. These regulations only apply in the rare circumstance in which a qualifying loss corporation that uses a particular accounting method undergoes an ownership change. Therefore, a Regulatory Flexibility Analysis under the Regulatory Flexibility Act (5 U.S.C. chapter 6) is not required. Nevertheless, the IRS and Treasury Department request comments from small entities that believe they might be adversely affected by these regulations. Pursuant to section 7805(f) of the Internal Revenue Code, this notice of proposed rulemaking will be submitted to the Chief Counsel for Advocacy of the Small Business Administration for comment on its impact on small business.

## Comments and Requests for a Public Hearing

Before these proposed regulations are adopted as final regulations, consideration will be given to any written (a signed original and (8) copies) or electronic comments that are submitted timely to the IRS. Please see the “Comments” section of the temporary regulation on this subject for a description of specific issues on which comments are requested. The IRS and Treasury Department also request comments on the clarity of the proposed rules and how they can be made easier to understand. All comments will be available for public inspection and copying. If a public hearing is scheduled, notice of the date, time, and place for the public hearing will be published in the **Federal Register**.

## Drafting Information

The principal author of these regulations is Sean McKeever, Office of Associate Chief Counsel (Corporate).