



## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

14 CFR Parts 1, 21, 22, 36, 43, 45, 61, 65, 91, and 119

[Docket No.: FAA-2023-1377; Notice No. 23-10]

RIN 2120-AL50

### Modernization of Special Airworthiness Certification

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

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

**SUMMARY:** The FAA proposes to amend rules for the manufacture, certification, operation, maintenance, and alteration of light-sport aircraft. The proposed amendments would enable enhancements in safety and performance and would increase privileges under a number of sport pilot and light-sport aircraft rules. These enhancements include increasing suitability for flight training, limited aerial work, and personal travel. This proposed rule would expand what aircraft sport pilots may operate. This NPRM also includes proposals to amend the special purpose operations for restricted category aircraft; amend the duration, eligible purposes, and operating limitations for experimental aircraft; and add operating limitations applicable to experimental aircraft engaged in space support vehicle flights to codify statutory language.

**DATES:** Send comments on or before [INSERT DATE 90 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** Send comments identified by docket number FAA-2023-1377 using any of the following methods:

- Federal eRulemaking Portal: Go to [regulations.gov](https://www.regulations.gov) and follow the online instructions for sending your comments electronically.

- Mail: Send comments to Docket Operations, M-30; U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE, Room W12-140, West Building Ground Floor, Washington, DC 20590-0001.
- Hand Delivery or Courier: Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, DC 20590-0001 between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- Fax: Fax comments to Docket Operations at (202)-493-2251.

*Docket*: Background documents or comments received may be read at [regulations.gov](http://regulations.gov) at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, DC 20590-0001, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** For technical questions concerning this action, contact James Newberger, Aircraft Certification Service (AIR-632), Federal Aviation Administration, 800 Independence Ave SW, Washington, DC 20591, telephone (202) 267-1636; email [james.e.newberger@faa.gov](mailto:james.e.newberger@faa.gov).

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#### List of Acronyms Frequently Used in This Document

- ASTM - ASTM International
- ATD - Aviation Training Device
- CAS - Calibrated Airspeed
- CFR - Code of Federal Regulations
- DOD - Department of Defense
- DOT - Department of Transportation
- FAA - Federal Aviation Administration
- FADEC - Full Authority Digital Electric Control
- FR - Federal Register
- FSTD - Flight Simulation Training Device
- IBR - Incorporation by reference
- LSAMA - Light-Sport Aircraft Manufacturers Assessment
- MOSAIC - Modernization of Special Airworthiness Certification
- MSL - Mean Sea Level (altitude)
- NAICS - North American Industry Classification System
- NPRM - Notice of proposed rulemaking
- NTSB - National Transportation Safety Board
- OMB - Office of Management and Budget
- PIC - Pilot in Command
- PTS - Practical Test Standards

RFA - Regulatory Flexibility Act  
RIA - Regulatory Impact Analysis  
U.S.C. - United States Code  
VFR - Visual Flight Rules  
VH - Maximum airspeed in level flight with maximum continuous power  
VNE - Maximum never exceed speed  
VS1 - Maximum Stalling Speed (in clean configuration)

## **I. Executive Summary**

### **A. Overview of the Proposed Rule**

The FAA proposes to amend rules related to the certification and operation of light-sport category aircraft. This rule would modernize the regulatory approach to light-sport aircraft, incorporating performance-based requirements that reflect advances in technology and use cases for this type of aircraft. The proposal is designed to respond to the evolving needs of this sector and provide for future growth and innovation without compromising safety.

In 2004, the FAA published the final rule titled “Certification of Aircraft and Airmen for the Operation of Light-Sport Aircraft,” which established rules for the manufacture, certification, operation, and maintenance of light-sport aircraft (69 FR 44771; July 27, 2004) (hereafter “the 2004 final rule”). That rule provided for the operation and manufacture of aircraft weighing less than 1,320 pounds (or 1,430 pounds for aircraft intended for operation on water). These “light-sport” aircraft included airplanes, gliders, balloons, powered parachutes, weight-shift-control aircraft, and gyroplanes. The FAA bases the rigor of certification requirements and operational limitations on a safety continuum that assesses the exposure of the public to risk for each aircraft and operation; as the risk increases due to increased operating privileges and aircraft capability, the requirements and corresponding rigor of requirements and procedures for certification increase.

In establishing the 2004 final rule, the FAA intentionally established a rigor of certification for light-sport category aircraft between normal category aircraft and aircraft

holding experimental certificates in view of intended operating privileges and aircraft capability. This preamble uses experimental amateur-built aircraft for the safety continuum discussions since they are similar to light-sport category aircraft in this proposal. Amateur-built aircraft are largely used for recreational purposes, are flown by sport pilots and pilots with higher grade certificates, and generally have the same flight envelope and occupancy limits. Amateur-built aircraft are below light-sport category aircraft on the safety continuum because of their lower safety assurance for aircraft design and being subject to stringent operating limitations. Amateur-built aircraft have no regulatory design requirements for suitability of materials used, structural integrity, or instruments, equipment, and systems. This proposed rule would prescribe design requirements for light-sport category aircraft for these items. This proposed rule would also allow light-sport aircraft to conduct aerial work operations that have been authorized by the manufacturer for compensation or hire. Amateur-built aircraft are limited to non-commercial operations for the purpose of education and recreation.

Since the 2004 rule, light-sport category aircraft have shown a lower accident rate than experimental amateur-built airplanes. The FAA considers that the successful safety record of light-sport category aircraft validates certification requirements established in the 2004 final rule and provides support for expanding the scope of certification for light-sport category aircraft and operations. As a result, the FAA identified this proposed rule as an opportunity to expand the 2004 final rule to include a wider variety of aircraft, increase performance, and increase operating privileges to extend these safety benefits to more aircraft. The FAA intends for these expansions to increase safety by encouraging aircraft owners, who may be deciding between an experimental aircraft or a light-sport category aircraft, to choose aircraft higher on the safety continuum and, therefore, meet higher aircraft certification requirements.

This proposed rule also addresses other aircraft that hold special airworthiness certificates. Specifically, the FAA proposes to codify additional special purpose operations for restricted category aircraft that the FAA has previously approved under discretion provided in § 21.25(b)(7). In addition, this rule would amend the duration, eligible purposes, and operating limitations for special airworthiness certificates issued for experimental purposes.

The FAA has identified proposals to improve both the safety and functionality of light-sport category aircraft and light-sport category kit-built aircraft. This rule would amend aircraft, pilot, maintenance, and operational requirements to increase both the safety and performance of these aircraft while mitigating risk. The FAA recognizes that this is a balancing act – where the risk is increased due to greater capability in one area, mitigations may be required from the other areas.

This proposal would establish performance-based requirements related to light-sport certificated aircraft. As a fundamental matter, the proposal would restructure how certification requirements for light-sport category aircraft are presented in the FAA's regulations. Currently, issuance of special airworthiness certificates under § 21.190 for light-sport category aircraft, sport pilot certificates under part 61, subpart J, and repairman (light-sport) certificates under part 65 are limited by a number of aircraft design limitations included in the definition of light-sport aircraft in § 1.1. This proposal would remove that definition and, in its place, write performance-based standards for aircraft and airman certification into 14 CFR parts 21, 61, and 65, where these requirements for other types of aircraft and airman certification reside. This would make the FAA's regulatory approach to light-sport category aircraft more consistent with its approach to other types of aircraft.

Another important change proposed under this rule would eliminate the weight limits for light-sport category aircraft. To enable the design and manufacture of

light-sport category aircraft that are safe to fly with increased capacity and ability, this proposal would apply new design and manufacturing requirements. This would allow growth and innovation within performance-based safety parameters. This proposal also expands aircraft that sport pilots can operate. Under this proposal, sport pilots could operate airplanes designed with up to four seats, even though they would remain limited to operating with only one passenger. Finally, the proposal would change the name of the repairman certificate (light-sport aircraft) to repairman certificate (light-sport). This certificate would apply to existing and new types of aircraft certificated in the light-sport category, such as rotorcraft and powered-lift. Related provisions would update the requirements for maintenance.

The FAA is also proposing regulations related to noise for light-sport aircraft, expanding applicability of part 36 noise limits. To provide flexibility and reduce burdens of compliance with these noise limits, the FAA is proposing options for compliance: conventional noise testing per part 36 or means of compliance via FAA-approved, industry consensus standards. The FAA expects that any consensus standards would not be limited to physical measurements of noise taken during test flights. They might instead be based on empirical data, analytical modeling, or generally accepted noise prediction methods if the underlying noise prediction methods are found to be robust.

In addition to maintenance and manufacturing requirements, the FAA also proposes to expand the kinds of operations that can be performed by light-sport category aircraft. Specifically, this proposal would permit light-sport category aircraft to be used in certain aerial work operations for aircraft that meet the applicable consensus standard for that operation.

Additionally, the FAA is proposing amendments to experimental aircraft regulations. The proposed regulations create new operating purposes for former military and kit-built aircraft and amend the operating purpose for market survey. The proposed

regulations also include new operating limitations, an increased certificate duration, and new noise requirements. The FAA is further proposing amendments related to restricted category aircraft, including a codification of special operating purposes for restricted category aircraft. This NPRM also includes proposed changes to right of way and operations around airports in Class G airspace.

#### B. Summary of Costs and Benefits

The proposed rule largely expands opportunities for light-sport category aircraft. These expansions may result in safety and recreational benefits; there may also be associated design and production costs. The FAA expects requirements to comply with noise standards would be minimal using industry consensus standards. The FAA also does not anticipate more than minimal incremental costs for other provisions of the proposed rule, such as training, and does not have data to estimate any cost savings, such as those that could result from operating certain light-sport category aircraft in aerial work for compensation.

## **II. Background**

#### A. History

In the 2004 final rule, the FAA reasoned that new rules for light-sport category aircraft were necessary to address advancing sport and recreational aviation technology, the lack of regulations for existing aircraft, and several petitions for exemptions and rulemaking. The 2004 final rule provided for the manufacture of safe and economical certificated aircraft beyond the weight limit permitted by part 103; established the sport pilot certificate; and allowed certificated pilots to operate light-sport category aircraft for sport and recreation, carry one passenger, and conduct flight training and towing in a safe manner. The resulting regulations also placed restrictions on light-sport category aircraft design and performance requirements including an aircraft weight limit of less than 1,320 pounds (1,430 pounds for aircraft intended for operation on water). Light-sport aircraft



include airplanes, gliders, balloons, powered parachutes, weight-shift-control aircraft, and gyroplanes.

The FAA has granted multiple exemptions for light-sport aircraft based on safety considerations that include:

- Retractable landing gear to enable takeoffs and landings from land and water;
- Various weight increases, with the largest allowing up to 1,850 pounds; and
- A  $V_{S1}$  stalling speed increase to 54 knots calibrated airspeed (CAS).

Discussion of the specific grants of exemption follow in section II.B.1.

The FAA also amended rules on two occasions for light-sport aircraft and airmen. In 2007, the FAA amended the definition of light-sport aircraft to permit development of lighter-than-air light-sport aircraft and allow retractable landing gear for light-sport aircraft intended for operation on water. In 2010, the FAA also amended rules for persons holding a sport pilot certificate and flight instructors with a sport pilot rating to address airman certification and operational issues that arose since the 2004 final rule. Detailed discussion of these amendments is included in section II.B.2.

In 2010, the FAA completed a Light-Sport Aircraft Manufacturers Assessment (LSAMA) Final Report, dated May 17, 2010 (the LSAMA Final Report), following its assessment of 14 light-sport category aircraft manufacturers to evaluate compliance with the 2004 final rule. On June 28, 2012, the FAA published a notification in the *Federal Register* (77 FR 38463) (the “LSAMA Notification”) describing its concerns identified in the LSAMA Final Report. Specific concerns included:

- Most manufacturing facilities evaluated could not fully substantiate that the aircraft for which they had issued a statement of compliance did, in fact, meet the consensus standards identified in those documents.

- The accuracy of declarations made in a statement of compliance.
- That more FAA involvement is warranted than originally intended under the 2004 final rule.

Considering these concerns, the FAA established an audit program under FAA Order 8130.36, Special Light-Sport Aircraft Audit Program, for conducting regular audits of light-sport category aircraft manufacturers and their associate facilities. Proposed safety enhancements under this NPRM for new training requirements for manufacturer's employees who are responsible for compliance findings and compliance statements are based on concerns described in the LSAMA Notification and are discussed in sections IV.D.17 and IV.D.19.

The 2004 final rule was successful in encouraging innovation in light-sport aircraft. According to FAA Registry data as of January 2023, over 200 models and 5,321 aircraft have been designed and manufactured under the 2004 final rule, distributed among the various classes of aircraft as follows:

- 4,459 airplanes.
- 456 powered parachutes.
- 336 weight-shift controlled aircraft.
- 70 gliders.

In addition, FAA airman certification databases show that approximately 7,000 sport pilots, 1,000 sport pilot instructors, 1,500 repairman (light-sport aircraft) with a maintenance rating, and 10,000 repairman (light-sport aircraft) with an inspection rating are currently certificated under provisions of the 2004 final rule.

The FAA views the safety record of light-sport category aircraft operations as validation of the original certification requirements and as support for expanding eligibility for aircraft certification, airmen certifications, and related operating privileges. From working with applicants for certification of aircraft, pilots, and repairman of light-

sport aircraft since the 2004 final rule took effect, the FAA has identified many proposals for amending those rules to enhance safety, performance, and privileges for operating light-sport category aircraft. The FAA is also proposing amendments concerning certification and operations of other aircraft that hold special airworthiness certificates. Detailed discussion of the safety record of light-sport category aircraft and these proposals are included in section IV of this NPRM.

## B. Related Actions

### 1. Exemptions to the 2004 Final Rule

As previously stated, the FAA granted multiple exemptions to the 2004 final rule based on safety considerations. Together, these actions permitted exempted aircraft to vary from the rule in the following ways:

- Retractable landing gear to enable takeoffs and landings from land and water.
- Various weight increases, with the largest allowed weight of up to 1,850 pounds.

Data, arguments, and findings that enabled the FAA to grant these exemptions are used as applicable to support proposals herein to codify these and similar provisions.

### 2. Amendments to the 2004 Final Rule

On April 19, 2007, the FAA published the final rule “Changes to the Definition of Certain Light-Sport Aircraft” (72 FR 19661) to amend the definition of light-sport aircraft to permit development of lighter-than-air light-sport aircraft and allow retractable landing gear for light-sport aircraft intended for operation on water. To date, the FAA has issued no special airworthiness certificates for lighter-than-air light-sport aircraft. This NPRM proposes to permit retractable landing gear for all operations to enhance safety more broadly within the light aircraft community by making light-sport category aircraft more attractive alternatives to experimental amateur-built aircraft.

On February 1, 2010, the FAA published the final rule “Certification of Aircraft and Airmen for the Operation of Light-Sport Aircraft; Modifications to Rules for Sport Pilots and Flight Instructors with a Sport Pilot Rating” (75 FR 5204; Correction published on March 30, 2010, 75 FR 15609) (hereinafter the 2010 final rule). The purpose of the 2010 final rule was to amend rules for sport pilots and flight instructors with a sport pilot rating to address airman certification and operational issues that arose since regulations for the certification of aircraft and airmen for the operation of light-sport aircraft were implemented in 2004.

### 3. FAA-Industry Listening Session

On December 12, 2022, the FAA hosted a listening session with representatives of the light-sport aircraft industry. A record of that meeting, including participants and their feedback, is included on the docket for this proposed rule, which is available at FAA-2023-1377. Importantly, that feedback replicated what the FAA has learned about the 2004 final rule as discussed previously in this NPRM.

### **III. Authority for this Rulemaking**

The FAA’s authority to issue rules on aviation safety is found in title 49 of the United States Code (U.S.C.). 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 49 U.S.C. 106(f) and (g), which establishes the authority of the Administrator to promulgate and revise regulations and rules related to aviation safety. This rulemaking is also promulgated under 49 U.S.C. 44701(a)(2)(A) and (a)(5), which provides that the FAA Administrator shall promote safe flight of civil aircraft in air commerce by prescribing regulations and minimum standards: (1) in the interest of safety for inspecting, servicing, and overhauling aircraft, aircraft engines, propellers, and appliances, and (2) that the FAA finds necessary for safety in air commerce and national security; 49 U.S.C. 44703,

which provides the general authority of the Administrator to prescribe regulations for the issuance of airman certificates when the Administrator finds, after investigation, that an individual is qualified for, and physically able to perform the duties related to, the position authorized by the certificate; 49 U.S.C. 40103(b)(1) and (2), which directs the FAA to issue regulations: (1) To ensure the safety of aircraft and the efficient use of airspace; and (2) to govern the flight of aircraft for purposes of navigating, protecting and identifying aircraft, and protecting individuals and property on the ground; and 49 U.S.C. 44715, which provides the Administrator the authority to prescribe regulations to control and abate aircraft noise and sonic boom. These proposed regulations are within the scope of those authorities because they are proposing to amend rules for the manufacture, certification, operation, maintenance, and alteration of light-sport category aircraft, to amend rules related to restricted category aircraft and experimental airworthiness certification, and to amend rules related to sport pilot and repairman certification.

Additionally, this rulemaking implements the Congressional mandate set forth in section 581 of the FAA Reauthorization Act of 2018 (Pub. L. 115-254), which authorizes certain aircraft holding experimental certificates to conduct space support vehicle flights. Section 581 amends 49 U.S.C. 44737 to allow the operator of an aircraft with a special airworthiness certification in the experimental category to operate the aircraft for the purpose of conducting a space support vehicle flight and conduct such flight under such certificate carrying persons or property for compensation or hire.

#### **IV. Discussion of the Proposal**

##### **A. General**

The FAA is proposing to amend rules for the manufacture, certification, operation, maintenance, and alteration of light-sport category aircraft. The proposed changes would enhance the safety, performance, and operating privileges of light-sport category aircraft. This proposal would also expand the types and characteristics of

aircraft that sport pilots may operate. The proposed changes would increase the suitability of light-sport category aircraft for flight training, limited aerial work, and personal travel. Additionally, the proposal would further enable the manufacture of safe and economical light-sport category aircraft. The FAA also proposes to update the list of approved operations for restricted category aircraft; amend the duration, eligible purposes, and operating limitations for special airworthiness certificates issued for experimental purposes; and add operating limitations applicable to experimental aircraft engaged in space support vehicle flights to codify a statutory provision.

### 1. The Evolution of Light-Sport Aircraft

The FAA acknowledged in the 2004 final rule that “there are areas where only time and experience will determine whether these regulatory provisions meet the FAA’s expectations or require modification.” In the approximately 20 years since the FAA published that rule, the FAA has increased its understanding of these aircraft. The 2004 final rule was successful in encouraging innovation in light-sport aircraft; over 200 models and 5,300 aircraft have been designed and manufactured under the 2004 final rule. The FAA has also considered several requests for exemption from the light-sport aircraft rules, granting eleven of them. This proposal would amend the rules for these aircraft to improve safety and performance and increase the scope of operations that may be performed with light-sport category aircraft.

### 2. A Safety Continuum

The FAA bases the rigor of certification requirements and operational limitations on a safety continuum that looks at the exposure of the public to risk for each aircraft and operation; as the risk increases due to increased operating privileges and aircraft capability, the requirements and corresponding rigor of requirements and procedures for aircraft and airman certification increase. In establishing the 2004 final rule, the FAA intentionally established a rigor of aircraft certification for light-sport category aircraft

between normal category aircraft and aircraft holding experimental certificates in view of intended operating privileges and aircraft capability. Normal category airplanes can weigh up to 19,000 lbs. and carry 19 persons. Accordingly, their certification rigor is going to be greater than an aircraft that has two to four seats because an accident would result in greater fatalities. However, to mitigate this risk, the part 23 airplane must be designed and manufactured to more stringent airworthiness standards. By meeting the more stringent airworthiness standards, the FAA grants greater operating privileges. Therefore, since light-sport category aircraft subject fewer people to risk and have fewer operating privileges when compared to part 23 airplanes, the 2004 final rule and this proposal includes less stringent certification standards.

Based on the rigor of aircraft certification established for light-sport category aircraft in the 2004 final rule, the FAA expected that light-sport category aircraft fatal accident rates would fall between experimental and normal category aircraft. To validate this expectation against fatal accident data, the FAA compared data for light-sport category airplanes and other aircraft categories or types that were most similar to light-sport category airplanes: experimental amateur-built airplanes with single, reciprocating engines, and fixed landing gear; and small normal category airplanes with single, reciprocating engines, and fixed landing gear. The fatal accident rate data compiled since 2011 for these aircraft<sup>1</sup> show that light-sport category aircraft fatal accident rates fall between experimental and normal category aircraft, validating that the rigor of certification requirements and procedures of the 2004 final rule falls, as intended, between experimental and normal category aircraft. This validation also supports proposals described in this NPRM for modest expansions of eligibility for certification of light-sport category aircraft, performance limitations for sport pilots, eligibility for

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<sup>1</sup> Light aircraft fatal accident trends are included on the docket at FAA-2023-1377. These trends are shown beginning in 2011 because of limitations on available data and since ten-year trends seem sufficient for this proposal.

certification of repairman (light-sport), and corresponding operating privileges for additional but similar operating privileges and risks. As described in section IV.C, the FAA has also identified other opportunities to improve the safety of light-sport category aircraft and experimental light-sport category kit-built aircraft.

Additionally, the lower accident rate of light-sport category aircraft as compared to experimental amateur-built airplanes has led the FAA to examine opportunities for expanding the 2004 final rule to include a wider variety of aircraft, increase performance, and increase operating privileges. The FAA intends for these expansions to increase safety by encouraging manufacturers to design and construct, and prospective aircraft owners to choose, aircraft higher on the safety continuum and, therefore, meet higher aircraft certification requirements.

The FAA used the safety continuum to analyze other aircraft as well; in addition to modifying the requirements for light-sport category aircraft and experimental light-sport category kit-built aircraft, this rule would also address the operation of other aircraft that hold special airworthiness certificates. Specifically, the FAA proposes to codify additional special purpose operations for restricted category aircraft that the FAA has previously approved under the discretion provided in part 21. In addition, this rule would amend the duration, eligible purposes, and operating limitations for special airworthiness certificates issued for experimental purposes, including an administrative change to add a new experimental purpose for former military aircraft, and codifying a statutory provision for space support vehicle flights. The FAA has referred to this combined set of proposals as the Modernization of Special Airworthiness Certification (MOSAIC) since these proposals primarily concern the regulation of aircraft that operate under special airworthiness certificates.



### 3. Expanding Light-Sport Category Aircraft and Related Provisions for Airman, Maintenance, and Operations

#### a. Eliminating the Definition of Light-Sport Aircraft

Currently, light-sport aircraft is defined in § 1.1, General definitions. Uniquely, the definition affects the scope of certification for light-sport category aircraft, sport pilots, and repairman (light-sport aircraft). Section 21.190 applies this definition to limit the scope of aircraft that may be issued a special airworthiness certificate for light-sport category aircraft. Part 61 uses this definition to specify which aircraft a sport pilot may operate. The FAA notes that, per part 61, a sport pilot may operate any aircraft that meets the definition of light-sport aircraft, including certain normal category, primary category, light-sport category, and experimental aircraft. This proposal would eliminate this definition of light-sport aircraft in § 1.1 and would instead specify separate requirements for aircraft, pilot, and repairman certification in 14 CFR part 21, 61, or 65, respectively. Although the FAA considered retaining and expanding this definition, deleting the definition and establishing separate certification requirements in part 21, 61, or 65 would better align with the location of such requirements for other categories of aircraft and for other airmen.

#### b. Changes to Aircraft Certification Requirements for Light-Sport Category Aircraft

The FAA has granted eleven exemptions to enable airworthiness certification of light-sport category aircraft with weights that exceed those in the definition of light-sport aircraft. These grants of exemption were based on FAA findings that relieving weight limits would enable significant safety enhancements not contemplated in the original regulations, reduce the likelihood of fatal accidents, and foster innovation in light-sport category aircraft. Consistent with the FAA's analysis of the safe operations accomplished under those exemptions, this proposal would eliminate the weight limits for light-sport

category aircraft. As discussed in section IV.C.2, eliminating weight limits for light-sport category aircraft would provide manufacturers opportunities to:

- Incorporate additional safety-enhancing designs and equipment,
- Design airframes that are more rugged for the flight-training environment,
- Increase fuel load and aircraft range,
- Allow for greater cabin size to enable greater occupant heights and weights,
- Improve aircraft handling in gusts, turbulence, and crosswinds, and
- Increase the suitability of light-sport category aircraft for other intended operating purposes, including recreation, personal travel, and certain aerial work.<sup>2</sup>

This proposal would apply new design and manufacturing requirements for light-sport category aircraft so that light-sport category aircraft are able to fly safely with increased capacity and ability. The FAA is further proposing to increase airplane stalling speed to enable increased aircraft weights to enable more robust airframes, installation of safety enhancing equipage, higher fuel capacity, and more seating capacity. The FAA proposes to eliminate limitations on classes of eligible aircraft, propellers, and landing gear; allow airplanes with up to 4 seats for increased utility and improved flight training opportunities; and increase the maximum airspeed for more practical personal travel. This proposal would require training for manufacturer employees who are responsible for safety findings and for signing a statement of compliance. This NPRM does not propose to amend requirements that limit manufacture of kits for light-sport category aircraft for make and model aircraft that were previously certificated as light-sport category aircraft. Accordingly, most of the proposals for expanding the eligibility for certification of light-

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<sup>2</sup> The FAA does not explicitly define aerial work; however, the FAA broadly interprets the term to mean work done from the air for compensation that does not involve the carriage of persons or property.

sport category aircraft would carry over to light-sport category kit-built aircraft. This proposal would remove the requirement to display the mark “Light-Sport” on light-sport category aircraft. These proposed changes are discussed in greater detail in section IV.D.20.

#### c. Changes to the Aircraft that Sport Pilots may Operate

This proposal would also expand what aircraft sport pilots can operate. Under this proposal, sport pilots could operate heavier aircraft than currently allowed under the § 1.1 definition and airplanes with up to four seats, even though they would remain limited to carrying only one passenger. This one passenger limitation would also apply to a flight instructor with a sport pilot rating conducting flight training in a four-seat airplane. Additionally, this proposal includes expansions to certain proposed sport pilot privileges through training and endorsements for airplanes that have a controllable pitch propeller, for aircraft with a retractable landing gear, and to conduct night operations. This proposal would also make corresponding changes to regulations affecting the privileges and limitations of a flight instructor certificate with a sport pilot rating. These proposed changes are discussed in greater detail in section IV.E.

#### d. Changes to Requirements for Repairman (Light-Sport) Certificates

This proposal would revise the name of the “repairman certificate (light-sport aircraft)” to “repairman certificate (light-sport)” and would allow for issuance of a repairman certificate (light-sport) for the new, proposed classes of aircraft that could be certificated in the light-sport category (i.e., helicopter and powered-lift). Additionally, the proposal would remove the hours-based training requirements for a light-sport repairman maintenance rating and instead require that applicants complete a training course, accepted by the FAA, that aligns with the Aviation Mechanic General, Airframe, and Powerplant Airman Certification Standards (Mechanic ACS). The training course would be required to include only those subject areas and knowledge, risk management, and

skill elements of the Mechanic ACS that are appropriate to the category of aircraft the training course covers. The proposal would also codify existing policy for repairman certificate (light-sport) training course providers to administer an examination, provide students with a certificate of completion, and require facilities, equipment, materials, and instructors that are appropriate to the training course content being taught. These proposed changes are discussed in greater detail in section IV.F.

e. Changes to Requirements for Maintenance of Light-Sport Category Aircraft

This proposal would require all repairs performed on light-sport category aircraft to meet applicable consensus standards, allow minor alterations to be accepted under the provisions of 14 CFR part 43, and remove the restriction that the Administrator approve aircraft-towing devices installed on these aircraft. These proposed changes are discussed in greater detail in section IV.G.

f. Changes to Requirements for Operating Light-Sport Category Aircraft

In addition to expanding eligibilities for issuance of special airworthiness certificates for light-sport category aircraft and experimental light-sport aircraft and aircraft that sport pilots may operate, the FAA proposes to expand the kinds of operations that can be performed by light-sport category aircraft. Specifically, this proposal would permit light-sport category aircraft to be used in certain aerial work operations for aircraft that meet the applicable FAA-accepted consensus standard for that operation. This proposal would also remove the requirement for owners/operators of light-sport category aircraft to comply with safety directives issued by the aircraft manufacturer; mandatory compliance with FAA Airworthiness Directives would remain unchanged. These proposed changes are discussed in greater detail in section IV.H.1.

#### 4. Changes to Certain Experimental Certificates

##### a. Duration

This proposal would increase the duration of certain experimental certificates from one to three years. These proposed changes are discussed in greater detail in section IV.I.1.

##### b. Changes for Former Military Aircraft

This proposal would add operating former-military aircraft as an additional purpose for which experimental certificates may be issued. Operations of former-military aircraft are currently authorized under other experimental certificates. These proposed changes are discussed in greater detail in section IV.I.5.

##### c. Codifying the Authorization for Space Support Vehicles

This proposal would codify the statutory language in 49 U.S.C. 44740 permitting the operator of an aircraft with a special airworthiness certification in the experimental category to operate the aircraft for the purpose of conducting a space support vehicle flight while carrying persons or property for compensation or hire. These proposed changes are discussed in greater detail in section IV.H.3. Such operations would be limited to aircraft that takeoff and land at a single launch or reentry site that is operated by an entity licensed to operate the launch or reentry site under 51 U.S.C. chapter 509; are owned or operated by or on behalf of a launch or reentry vehicle operator licensed under 51 U.S.C. chapter 509; and is either a launch vehicle, reentry vehicle, or a component thereof. These operations would only be allowed to simulate space flight conditions in support of training for potential space flight participants, government astronauts, or crew; testing hardware to be used in space flight; or conducting research and development tasks, which require the unique capabilities of the aircraft conducting the flight.

## 5. Changes for Restricted Category Aircraft

This proposal would enhance the requirements for the certification of former-military aircraft in the restricted category by requiring the aircraft to have a service history with the U.S. Armed Forces. Under the provision in § 21.25(b)(7), the FAA has approved additional special purpose operations for which restricted category aircraft may be certificated. Currently, those additional purposes are only listed in FAA policy documents for type and airworthiness certification of these aircraft. This proposal would amend § 21.25 to expand the list of special purpose operations for which restricted category aircraft may be certificated to include these additional purposes.

## 6. Changes for Noise

This proposal would apply 14 CFR part 36 noise standards to light-sport category aircraft and experimental light-sport category aircraft certificated after the effective date of the rule, or that are altered in a manner that changes the noise profile of light-sport category aircraft and certain experimental light-sport category aircraft. This proposal would require light-sport category aircraft and certain experimental light-sport category aircraft to demonstrate compliance to the part 36 noise limits using an FAA-approved consensus standard or a combination of current part 36 procedures that are appropriate for the aircraft seeking an airworthiness certificate for a light-sport category aircraft or an experimental light-sport category aircraft. The FAA anticipates the industry developing acceptable and appropriate consensus standards for noise that would provide simple, low-cost methods of compliance with part 36. For example, a modeling-based consensus standard would be expected to significantly reduce the cost of noise compliance. Not only would there not be a need to physically test every model (or aircraft) but the proposal would also allow manufacturers to use predictive analysis to guide and support aircraft design decisions in earlier phases, avoiding costly future redesign or modifications. The proposed noise requirements are discussed in greater detail in section V.K.

B. Revision of Definitions Applicable to the Certification and Operation of Light-Sport Category Aircraft

1. Revision of the Definition of Consensus Standard

OMB Circular A-119 establishes policy for the Federal use and development of voluntary consensus standards and conformity assessment activities. Federal goals for using consensus standards include providing incentives and opportunities to establish standards that serve national needs, encouraging long-term growth for U.S. enterprises, and promoting efficiency and economic competition through harmonization of standards. Voluntary consensus standards are developed or adopted by consensus standards bodies with broad participation of interested stakeholders, including manufacturers and the FAA.

Because of the general acceptance and use of consensus standards throughout the aviation community, this rule proposes a broader definition for consensus standards than that currently found in § 1.1. The current definition was adopted as part of the 2004 final rule. As such, the definition for consensus standards currently is only applicable for certificating light-sport aircraft. The proposed definition would apply to a wider variety of certification functions applicable under 14 CFR.

The proposed definition would adopt a description of a consensus standard that better aligns with the provisions of OMB Circular A-119. The proposed rule would establish the characteristics that a consensus standard must have to meet the definition of a consensus standard. Accordingly, to be considered a consensus standard under this proposed rule, a consensus standard would need to have been adopted under procedures which provide an opportunity for input by persons interested and affected by the scope or provisions of the standard. These persons would also have had to reach substantial agreement on its adoption. Additionally, to be used as a means of compliance for aircraft design, operation, production, maintenance, or airworthiness, a consensus standard would

have to be accepted by the FAA. For the purposes of this proposed definition, the FAA considers “airworthiness” to include noise and continued operational safety requirements.

After a consensus standard has been adopted by a consensus standards body, the FAA would review the standard for acceptance. The FAA typically advises the public of the agency’s acceptance of these consensus standards through a notice of acceptance which is published in the *Federal Register*. This review and acceptance process is not intended to restrict industry’s ability to develop consensus standards, but rather to enable the FAA to advise the public when an industry-developed consensus standard for aircraft design, operation, production, maintenance, or airworthiness complies with the proposed performance-based regulatory requirements.

Currently, consensus standards for the airworthiness certification of light-sport category aircraft that have been developed by ASTM International (ASTM) and accepted for use by the FAA would meet the proposed definition.<sup>3</sup> The current process for developing consensus standards by ASTM for the certification of light-sport category aircraft would be consistent with the provisions of the proposed definition.

The FAA notes that consensus standards have also been developed to comply with the performance-based airworthiness standards for the certification of airplanes found in amendment 64 of 14 CFR part 23. They serve as a means of compliance to the regulatory requirements contained in part 23 and have been accepted by the FAA.<sup>4</sup> Consensus standards have also been used as a means of compliance for operation of small unmanned aircraft systems (small UAS) over people under part 107 and remote identification of unmanned aircraft under part 89.

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<sup>3</sup> For example, the FAA published a notice titled “Consensus Standards, Light-Sport Aircraft, Notice No. NOA-21-01” (87 FR 10275; February 23, 2022) in which the FAA designated ASTM Designation F2245-20, “Standard Specification for Design and Performance of a Light Sport Airplane” (F2245-20) as a consensus standard that is available and acceptable for use. F2245-20 applies to aircraft design and, as described in ASTM’s “The Handbook for Standardization,” has been developed with input by a broad array of interested stakeholders.

<sup>4</sup> See 71 FR 12771, 75 FR 58016, 79 FR 78553 concerning electric wiring systems before part 23, amendment 61. For part 23, amendment 64, see 87 FR 13911.



The FAA anticipates an increased use of consensus standards to comply with new performance-based regulations and has also proposed their use as part of the special airworthiness certification process to comply with the noise requirements in part 36. Accordingly, the agency determined that it would be appropriate to broaden the current applicability of this definition to a potentially wider range of aircraft certification activities than light-sport category aircraft only.

The revised definition would require that the consensus standards process include participants that are impacted by the consensus standards. For the development of these consensus standards, organizations and participants in the consensus standards development process could consist of, but not be limited to, aircraft manufacturers, pilots, maintainers, aviation associations, and government regulators. The FAA contends that the use of a consensus standards process to develop means of compliance to performance-based regulations should provide both the FAA and industry with a means to rapidly adapt to changing technology and better respond to market conditions while continuing to enable safe operations within the national airspace system.

Alternatively, the FAA is considering removing the definition of consensus standard from § 1.1. Consensus standard is a commonly accepted term used by industry and across<sup>5</sup> the Federal Government and may not require a definition in § 1.1 to be understood in the context of 14 CFR. Additionally, as stated previously, the current definition of consensus standard is limited to the context of light sport aircraft and does not recognize the breadth of using consensus standards in aviation today. The FAA requests comment on whether the FAA should remove the definition of consensus standard from § 1.1 altogether or revise the definition as proposed.

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<sup>5</sup> Such as pursuant to the National Technology Transfer and Advancement Act (NTTAA) of 1995, and OMB Circular A-119, Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities.

## 2. Removal of Definition of Light-Sport Aircraft from 14 CFR 1.1

Section 1.1 currently defines “light-sport aircraft” as an aircraft other than a helicopter or powered-lift that, since its original certification, has continued to meet several designated parameters (for example, aircraft weight, seating, stalling speed, maximum speed, engine type, propeller type, etc.). Uniquely, the definition affects the scope of certification for light-sport category aircraft, sport pilots, and repairman (light-sport aircraft). Section 21.190 applies this definition to limit the scope of aircraft that may be issued a special airworthiness certificate in the light-sport category. Part 61 uses this definition to specify which aircraft a sport pilot may operate. Because of the common definition, all aircraft certificated under § 21.190 are light-sport aircraft and thus can be flown by sport pilots. However, a sport pilot is not limited to only § 21.190 aircraft and may operate any aircraft that meets the definition of light-sport aircraft, including certain normal category, primary category, light-sport category, and experimental aircraft.

The FAA is proposing to remove the definition of light-sport aircraft from § 1.1 because the regulatory definition contains substantive requirements. A regulatory definition should define a term used in a particular title, chapter, or part of the CFR. Accordingly, the substantive aircraft certification requirements for light-sport category aircraft would be relocated with modifications into proposed § 21.190 and part 22, while requirements establishing the parameters for the aircraft in which a sport pilot may act as pilot in command (PIC) would be incorporated into part 61.

The current § 1.1 definition of light-sport aircraft was created to establish parameters for the airworthiness certification of light-sport category aircraft using consensus standards, as well as to identify aircraft that can be safely operated by pilots exercising the privileges of a sport pilot certificate. Currently, under § 61.315, sport pilots are only permitted to operate aircraft that meet the definition of a light-sport aircraft as defined in § 1.1. Replacing the § 1.1 definition with separate certification requirements

for aircraft, pilots, and repairman would allow more flexibility using the proposed certification procedures in § 21.190 and intended operations. In other words, this proposed rule would decouple certification requirements for light-sport category aircraft certification and sport pilot certification. One effect of placing the proposed requirements in separate parts and the expansion of light-sport category aircraft certification requirements is that an aircraft certificated in the light-sport category under § 21.190 may exceed the parameters of an aircraft that a sport pilot may act as PIC of under the separate requirements in part 61.

Persons exercising the privileges of a sport pilot certificate or a flight instructor certificate with a sport pilot rating would no longer be restricted to operating light-sport aircraft as defined in § 1.1. In this proposed rule, these airmen would be able to exercise the privileges of their certificate in any aircraft that does not exceed the aircraft performance limitations derived from the current § 1.1 definition and set forth in the proposed new § 61.316. The FAA's proposal concerning airmen certification is discussed in section IV.E.

## C. Expansion of Eligibility for Light-Sport Category Aircraft and Sport Pilots

### 1. Certification of Additional Aircraft Classes

The current § 1.1 definition of light-sport aircraft excludes helicopters and powered-lift from being considered as light-sport aircraft. The FAA proposes to allow the airworthiness certification of rotorcraft and powered-lift as light-sport category aircraft under § 21.190, provided these aircraft are certificated in accordance with the proposed performance-based requirements in part 22 using an FAA-accepted consensus standard as a means of compliance. This proposed rule would allow any class of aircraft<sup>6</sup> to be eligible for certification in the light-sport category, so long as the aircraft meets the

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<sup>6</sup> See 14 CFR 1.1, which defines class, for purposes of the certification of aircraft, as a broad grouping of aircraft having similar characteristic of propulsion, flight, or landing.

proposed performance-based requirements of part 22 and the eligibility criteria in proposed §§ 21.190 and 22.100. The FAA anticipates that industry would develop acceptable and appropriate consensus standards to comply with the performance-based requirements in part 22. The FAA contends that such action would maintain a level of safety appropriate to the certification of these aircraft while fostering innovation.

Unmanned aircraft are precluded from certification as light-sport category aircraft. The FAA considered expanding the scope of the proposed eligibility requirements to evaluate the potential certification of unmanned aircraft; however, due to the novelty, technical complexity, and significant operational differences between unmanned and manned aircraft, the FAA chose not to address unmanned aircraft certification as a part of this rulemaking. Accordingly, as proposed in § 21.190(a), this proposal does not apply to the certification of unmanned aircraft in the light-sport category.

The FAA also chose not to consider powered lift privileges for sport pilots, given the complexity and ongoing development of those aircraft designs and associated pilot certification and operational rules that the FAA is considering. However, the FAA expects that future rulemaking may consider these aircraft and associated operations if they can fit within the constraints of sport pilot operations and aircraft certification requirements.

As discussed later in the preamble, the FAA is also proposing to expand sport pilot privileges to include helicopter privileges.

## 2. Maximum Takeoff Weight

Section 1.1 currently limits the maximum takeoff weight for light-sport category aircraft to 1,320 lbs., or 1,430 lbs. for aircraft intended for operation on water. This proposal would eliminate the maximum takeoff weight limitations for light-sport category aircraft. Although this proposal removes the specific weight limits for light-

sport category aircraft, this proposed rule would indirectly limit aircraft weight via stalling speed limitations, as discussed in sections IV.C.2 and IV.C.4. As noted in those sections, the stalling speed limit would indirectly limit the weight at around 3,000 pounds. Although still limiting aircraft weight, the proposed  $V_{S1}$  stalling speed would enable aircraft with heavier weights than the definition permits for light-sport aircraft. Enabling heavier weights would enable manufacturers to include safety-enhancing designs and equipment such as advanced stall resistant airframes, increased load factor resilience, improved passenger cabin crash safety mechanisms, ballistic safety parachutes, passenger airbags, stronger and more durable landing gear, and greater fuel capacity.

From its work with manufacturers, flight schools, and individual aircraft owners since the 2004 final rule took effect, the FAA anticipates that allowing heavier aircraft would result in more robust airframe designs to meet the needs of aircraft owners. A “robust airframe design” is more reliable, resilient, and does not fail as easily under a given load as a less robust airframe would. In addition, an aircraft in motion with more mass requires more force to disrupt its current flight path. Accordingly, heavier aircraft tend to be more stable during turbulent or windy conditions and, in turn, reduce the workload on the pilot attempting to maintain control and a desired course. Specifically, lighter aircraft get jostled around more in turbulence, which causes the pilot to work harder to maintain aircraft control.

The weight limitations in the definition of light-sport aircraft preclude many of these design and safety features and is representative of why the FAA has granted 11 exemptions to the weight limit for certain light-sport category aircraft with safety features installed. These exemptions allowed airworthiness certification of certain, heavier light-sport category aircraft to enable improved airframe designs and the installation of various safety enhancing devices.

In summary, the current weight limitation precludes the design and installation of many safety enhancements. Therefore, this NPRM proposes to remove weight as an eligibility requirement for certification of light-sport category aircraft and as a limitation on what aircraft sport pilots may fly. Sport pilots would be permitted to operate these heavier aircraft if the aircraft satisfy the performance limitations in the proposed § 61.316 including the  $V_{s1}$  limitation that will indirectly limit the weight to around 3,000 pounds. The FAA does not find that this increased weight would appreciably alter a sport pilot's ability to fly the aircraft, provided the aircraft satisfies the design and performance limitations proposed in § 61.316.<sup>7</sup>

### 3. Maximum $V_H$ Airspeed in Level Flight

The § 1.1 definition of light-sport aircraft limits light-sport aircraft to a  $V_H$  of not more than 120 knots CAS under standard atmospheric conditions at sea level. A  $V_H$  speed limit would not be retained for the airplanes or gliders in the proposed § 61.316 performance and design limitations for aircraft that a sport pilot could operate. Although an airplane or glider's maximum airspeed is typically limited to approximately three to four times the aircraft's  $V_{s1}$  under ideal conditions, proposed § 22.100(a)(4) would include a  $V_H$  limit of 250 knots CAS for light-sport category aircraft to account for potential advances in technology and manufacturing practices that could enable higher speeds. Furthermore, after approximately 20 years of experience with the operation of light-sport category aircraft, the FAA has not noted any definitive data that links cruise speed as a contributing factor in accidents involving light-sport category aircraft. This experience informs the FAA's current rulemaking proposal, including its proposal to increase the airspeed limitation.

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<sup>7</sup> See section IV.E of this preamble for a discussion of the design and performance limitations proposed in § 61.316, which would limit the aircraft that a sport pilot could fly to an aircraft that requires skill comparable to the skill required to fly an LSA today.

Analysis of performance data for 117 type-certificated, light-sport category, and amateur-built airplanes with stalling speeds less than or equal to the proposed 54 knots CAS stalling speed limit shows a maximum speed of 220 knots CAS, with the majority below 190 knots CAS. Allowing a maximum speed of 250 knots CAS is intended to provide an upper limit appropriate for a category of aircraft intended for recreation, flight training, and limited aerial work while providing sufficient margin to avoid practical constraints of new airplane designs by this limit.<sup>8</sup>

For pilot certification purposes, the FAA does not propose to retain or include a  $V_H$  airspeed limitation in the proposed § 61.316 aircraft performance limitations because the FAA determined that, the proposed maximum stalling speed  $V_{S1}$  of 54 knots (as explained in section IV.C.4) for airplanes and the existing maximum stalling speed  $V_{S1}$  of 45 knots for gliders, will indirectly limit the cruise airspeeds<sup>9</sup> for the aircraft that sport pilots may fly under the proposed performance limitations in part 61. The FAA recognizes helicopter design and aerodynamic flight limitations inherently limit the  $V_H$  speed. The existing fleet of two seat helicopters do not exceed 150 knots in cruise flight. Therefore, the FAA does not propose or need a prescriptive speed limit for two seat helicopters that a sport pilot can operate.

In 2018, the FAA codified additional training and endorsement privileges for flight instructors with a sport pilot rating.<sup>10</sup> This provision authorized these flight instructors to provide additional training and endorsements for sport pilot applicants who wish to conduct cross-country flights in light-sport airplanes with a  $V_H$  greater than 87 knots CAS.<sup>11</sup> These amendments reinforce that additional training and a subsequent flight

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<sup>8</sup> Given that the vast majority of light-sport category aircraft operations would occur below 10,000 feet mean sea level (MSL), where part 91 limits airspeed below 250 knots indicated airspeed, the maximum 250 knot CAS limitation is appropriate for the light-sport category.

<sup>9</sup> As previously stated, an airplane's maximum airspeed is generally limited to three to four times the aircraft's  $V_{S1}$  under ideal conditions. If the maximum stalling speed is 54 knots, then the airplane's maximum airspeed would be limited to a maximum airspeed of 216 knots (54 multiplied by 4).

<sup>10</sup> Regulatory Relief: Aviation Training Devices; Pilot Certification, Training, and Pilot Schools; and Other Provisions, 83 FR 30232 (June 27, 2018).

<sup>11</sup> 83 FR 30254-57.

instructor endorsement can properly qualify sport pilots to operate various aircraft safely in the national airspace system.

Additionally, the FAA notes that student pilots, who receive training and a validating flight instructor endorsement, can operate aircraft at speeds greater than 120 knots as pilot-in-command. The FAA contends that, since the implementation of the training and instructor endorsement requirements permitting sport pilots to operate airplanes up to the current  $V_H$  speed limitation of 120 knots, instructor training and endorsements have been demonstrated to be a proven, effective method for validating that sport pilots can safely operate faster aircraft in the national airspace system, just as is allowed for student pilots with a lower grade of pilot certificate. This reflects the incongruities between the allowed operations for student pilots and sport pilots. For example, student pilots can operate aircraft at faster speeds than individuals that hold a sport pilot certificate, even though a sport pilot certificate is a higher grade of pilot certificate than a student pilot certificate. Thus, the FAA reasons that sport pilots can be permitted to operate faster aircraft safely in the national airspace system using instructor training and endorsements for validating pilot proficiency.

#### 4. Maximum Stalling Speed ( $V_{S1}$ )

The light-sport aircraft definition in § 1.1 limits the maximum  $V_{S1}$  for light-sport aircraft to 45 knots CAS at the aircraft's maximum certificated takeoff weight and most critical center of gravity. The proposal would retain the 45 knots CAS maximum  $V_{S1}$  for gliders and weight-shift-control aircraft. The FAA is proposing to increase the maximum  $V_{S1}$  to 54 knots CAS for airplanes. Regulatory provisions addressing  $V_{S1}$  would remain inapplicable to rotorcraft and lighter-than-air aircraft (e.g., balloons and airships), and would be removed for powered parachutes.

The 45-knot limitation indirectly prohibits the use of heavier airplanes due to the correlation between stalling speed and aircraft weight. Because the FAA is seeking to



accommodate greater airplane weights to enable more robust airframe designs and availability of safety enhancements, the FAA selected this proposed  $V_{S1}$  speed limit at nine knots above the current limitation for light-sport aircraft. The FAA determined that an airplane with a maximum  $V_{S1}$  limitation of 54 knots would permit airplane designs up to approximately 3,000 pounds. As proposed in §§ 22.100(a)(3) and 61.316(a), the new stalling speed limitation would apply to airplanes at the maximum certificated takeoff weight.

In the absence of a specific weight limitation in the proposed rule, the new  $V_{S1}$  limit would provide flexibility for aircraft manufacturers to build more robust airframes and include desirable safety enhancements. This proposed change would expand aircraft that sport pilots may operate to include any existing aircraft that meets the sport pilot performance limitations as specified in proposed § 61.316. For airplanes, the proposed  $V_{S1}$  limit is not more than 54 knots CAS for sport pilots.

The FAA has monitored the accident history of light-sport category aircraft since 2004. As of 2021, there have been 984 accidents or incidents involving light-sport category aircraft, with approximately half of those accidents or incidents occurring during the landing phase. Of the 501 landing accidents, seven resulted in a fatality. The second highest number of accidents or incidents, 164, occurred during an emergency descent. The FAA chose a  $V_{S1}$  of 54 knots CAS to strike a balance between allowing heavier aircraft to accommodate increased safety features, while increasing the stalling speed no more than necessary to retain low speeds during approach and landing. While the FAA recognizes that low stalling speeds will reduce kinetic energy levels and serve to improve occupant survivability in the event of an aircraft accident, enabling the addition of safety enhancing designs commensurate with increased weight could also improve occupant survivability.

The FAA has determined that retaining the current  $V_{S1}$  restriction of 45 knots CAS for light-sport category airplanes would overly restrict the ability of aircraft manufacturers to produce heavier airplanes with additional safety features that this rule is intending to enable. A maximum  $V_{S1}$  of 54 knots CAS for airplanes would facilitate the production of heavier, more robust airplanes without unduly compromising the ability of these airplanes to be safely operated. Although the FAA considered increasing the proposed maximum stalling speed of airplanes above 54 knots CAS, the agency's review of current aircraft performance data showed that this proposal would be sufficient to produce four-seat airplanes.

Although the FAA proposes to permit the certification of rotorcraft under the proposal, stall speed restrictions, such as a maximum  $V_{S1}$ , are inapplicable for aircraft that depend principally for their support in flight by the lift generated by one or more rotors. Rotorcraft have the ability to hover or remain in place in the air with no horizontal movement. In the event of engine failure, they can autorotate in a controlled descent to the ground. Accordingly, rotorcraft are not subject to a maximum stall speed in this proposed rule.

Stalling speed restrictions are also not being proposed for powered-lift due to their ability to operate in various flight mode configurations, including thrust-borne or hover, similar to a rotorcraft. The designs of lighter powered-lift typically do not have large wing surface areas and therefore have higher stalling speeds during wing-borne (airplane) flight mode. However, these aircraft also can transition to semi-thrust borne mode where the powerplant shares the responsibility of producing lift as airspeed transitions between enroute airspeeds and hover. Therefore, as discussed under proposed § 22.115 and consistent with the airworthiness criteria from *Federal Register* notifications for the Joby Aero Inc., Model JAS4-1 and Archer Aviation Inc., Model M001 powered-lift, this

NPRM proposes to require the determination of minimum safe speeds for various flight configurations for powered-lift rather than a maximum stalling speed.<sup>12</sup>

As discussed, the proposed stalling speed would generally limit the weight of airplanes. However, similar proposed limits would not have the same effect for other classes of aircraft. The FAA recognizes that while restrictions on maximum seating capacity and limitations on aerial work may effectively limit a manufacturer's interest in building larger aircraft, the absence of any aerodynamic or other prescriptive design restriction would not otherwise limit the potential weight of these aircraft. The FAA specifically requests comments on appropriate parameters to limit the weight of light-sport category rotorcraft and powered-lift.

#### 5. Maximum Seating Capacity

The current § 1.1 light-sport aircraft definition limits light-sport aircraft to a maximum seating capacity of no more than two persons, including the pilot. This requirement from the 2004 rule provided for a low-risk design that would be appropriate for operation by a sport pilot. With the performance expansions proposed in this rule for the design of light-sport category aircraft and the intention to decouple these aircraft from sport pilot restrictions, there is no longer a need to restrict all light-sport category aircraft to two seats. This proposed rule, in § 22.100, would keep the maximum seating capacity of not more than two persons, including the pilot, for all classes of light-sport aircraft except airplanes. This proposal would allow airplanes to have a maximum seating capacity of not more than four persons, including the pilot.

When the 2004 final rule published, the FAA was focused on allowing a flight instructor in the aircraft to provide flight instruction and, eventually, allowing sport pilots to carry a single passenger.<sup>13</sup> At that time, the FAA did not foresee an expanded market

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<sup>12</sup> Airworthiness Criteria: Special Class Airworthiness Criteria for the Joby Aero, Inc. Model JAS4-1 Powered-Lift (87 FR 67399; November 8, 2022), and Airworthiness Criteria: Special Class Airworthiness Criteria for the Archer Aviation Inc. Model M001 Powered-Lift (87 FR 77749; December 20, 2022).

<sup>13</sup> See 69 FR 44820.

for light-sport category aircraft that could be operated by pilots with a higher grade of certificate who can exercise the privilege of carrying more passengers. For example, an individual with a private pilot certificate may operate an aircraft that has more than two seats and can carry more than one passenger. In this proposed rule, the performance limits of § 61.316 would allow four-seat airplanes but maintain the restriction for sport pilots to carry one passenger, keeping the intent of the 2004 final rule restriction for sport pilots. For this proposal, the holder of a higher grade of pilot certificate at the private pilot level or above could operate a four-seat light-sport category airplane and carry up to three passengers.

Allowing four seats for light-sport category airplanes would increase the utility of these aircraft for recreational and personal use. With the increased utility because of four-seat designs, light-sport category airplane operations by pilots holding higher levels of certification would likely increase. The FAA anticipates an increase to the overall experience level of pilots that operate light-sport category airplanes, and this generally would have a positive safety benefit.

The increased utility of light-sport category airplanes may also improve safety by providing aircraft owners with an attractive alternative to experimental amateur-built aircraft. In this proposed rule, all light-sport category aircraft would be built to FAA-accepted consensus standards that meet performance-based requirements in part 22 for design, production, and airworthiness, unlike amateur-built aircraft, which do not have any similar regulatory requirements. As previously discussed, amateur-built aircraft are lower on the FAA's safety continuum than light-sport category aircraft.

The four-seat design for light-sport category airplanes in this proposal would match the seating limit of primary category airplanes certificated under § 21.24. Primary category rules and the proposals for light-sport category airplanes would result in these

categories sharing similar weight and seating limitations for aircraft built for the purpose of personal use.

Although 14 CFR does not impose a seating limitation on amateur-built aircraft, nearly all such aircraft have four or fewer seats. Of the 27,486 amateur-built aircraft in the FAA Registry, only 131 have more than four seats.<sup>14</sup> Accordingly, the light aircraft community has shown overwhelming support for recreational and personal use aircraft being designed with four or fewer seats.

Increasing the allowed number of seats above four for light-sport category aircraft would require a significantly heavier aircraft, challenging aircraft designers to comply with the proposed stalling speed limit and adding increased complexity to the aircraft and powerplant. In establishing a prescriptive limit for the number of seats, four seats strikes a balance between risk and utility that is appropriate for a category of aircraft intended for recreation and personal use.

Additionally, proposed § 91.327(f) would limit the number of occupants in light-sport category aircraft to not exceed the aircraft's seating capacity.

The proposed rule would retain the current maximum seating capacity of not more than two persons for other classes of light-sport aircraft, including, gyroplanes, gliders, weight-shift control aircraft, powered parachutes, balloons, and airships. These classes of light-sport category aircraft are operated strictly for recreation. With weight and balance challenges due to unusual seating configurations, additional passengers on these classes of aircraft would increase risk and not be appropriate for certification as light-sport category aircraft.

Although this proposal would enable certification of new types of light-sport category aircraft such as rotorcraft and powered lift, this proposal would limit these aircraft to two seats. The FAA has little experience on the safety metrics associated with

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<sup>14</sup> Data from FAA Registry dated December 1, 2022.

these classes of light-sport category aircraft, as such, the FAA finds that the maximum seating capacity of two is appropriate. The FAA may consider future rulemaking to increase the proposed two seat limitation for these classes of aircraft as experience increases and consensus standards are developed.

Regarding pilot certification, the FAA is proposing to allow sport pilots to operate airplanes that have a maximum seating capacity of four persons under § 61.316(c). However, sport pilots will continue to be limited to carrying only one passenger under § 61.315(c)(4).<sup>15</sup> The FAA contends that the piloting skills necessary to operate a four-seat airplane do not differ from those skills required to operate a two-seat airplane if the airplane satisfies the sport pilot design and performance limitations listed in proposed § 61.316. The number of seats (two versus four) does not affect the skill necessary to control an airplane. The FAA proposes to increase the seating capacity for airplanes that sport pilots may operate because the revised maximum stalling speed, as previously described, would permit sport pilots to operate additional existing and future certificated single-engine production airplanes with four seats.<sup>16</sup> Per the safety continuum concept, increasing the number of persons aboard should require an increased rigor of certification including a higher grade of pilot certificate. Allowing sport pilots to operate four-seat airplanes (even with only two persons aboard) would ease barriers in flight training for sport pilots given the availability of legacy, four-seat airplanes in flight schools. This proposed amendment is like that imposed on recreational pilots that can operate four-seat airplanes but can only carry one passenger,<sup>17</sup> equating the risk associated with these operations to the appropriate level of pilot privileges, consistent with the FAA's safety continuum.

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<sup>15</sup> "You may not act as pilot in command of a light-sport aircraft ... [w]hile carrying more than one passenger." See: 14 CFR 61.315(c)(4).

<sup>16</sup> For example, this proposed amendment would permit sport pilots to operate existing certificated single-engine production aircraft.

<sup>17</sup> See 14 CFR 61.101(a)(1) and (e)(1)(i).

The FAA contends that the proposed maximum seating capacity requirements would provide appropriate utility for recreation, training, personal travel, and certain aerial work while maintaining an appropriate level of safety.

#### 6. Engine and Motors (If Powered)

The current § 1.1 light-sport aircraft definition limits light-sport aircraft to those with a single reciprocating engine if the aircraft is powered. This requirement from the 2004 rule provided for a simple engine design that would be appropriate for operation by a sport pilot. With the performance expansions proposed in this rule for the design of light-sport category aircraft and the intention to decouple from sport pilot limitations, there is no longer a need to restrict light-sport category aircraft to a single reciprocating engine. This proposed rule would omit the single reciprocating engine limitation as an eligibility requirement in § 22.100. Accordingly, this proposed rule would allow light-sport category aircraft to be built with any number and type of engines or motors. The performance limitations for aircraft that a sport pilot may act as pilot in command of would not include the limitation on a single reciprocating engine if the aircraft is powered.

Since this powerplant limitation was established in 2004, full authority digital engine control (FADEC) technology has evolved significantly. FADEC<sup>18</sup> automates and simplifies the operation of a turbine powerplant. Today, many turbine-powered aircraft use FADEC automation to manage powerplant performance and simplify aircraft powerplant operations, reducing pilot workload. As a result, many turbine-powered aircraft are no longer directly associated with excessive speed or complexity.

Advancements in simplified designs of turbine-engine technology have led to the use of small turbine engines in a variety of aircraft, including self-launching gliders. The FAA

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<sup>18</sup> FADEC combines throttle, prop, and mixture controls into a single control. With a FADEC system, there is no direct pilot control over the engine or manual control mode. FADEC systems are autonomous, self-monitoring, self-operating, and redundant. These systems can decrease pilot workload and provide engine monitoring capability that can alert operators of certain mechanical problems.

recognizes that because of automation, many modern turbine powerplants are now easier to operate than many existing piston-powered aircraft. Modern automated powerplants reduce the complexity previously associated with piloting aircraft that use powerplants other than non-turbine engines.

The FAA also reasons that removal of a specific engine requirement will encourage ongoing development, innovation, and increased efficiency of various types of powerplants for aircraft. The FAA seeks to encourage flexibility for aircraft manufacturers to include simple-to-operate powerplants of any design that will provide benefits to include reduced cost, ease of operation, and reduced emissions—especially for electric-powered aircraft. In summary, limiting the number and type of powerplants for light-sport category aircraft is no longer necessary and any risk associated with their use would be appropriately mitigated by aircraft and pilot certification processes.

#### 7. Use of a Controllable Pitch Propeller

The § 1.1 definition of a light-sport aircraft currently requires a fixed or ground adjustable propeller if the aircraft is a powered aircraft other than a powered glider. The light-sport aircraft definition also requires that powered gliders have a fixed or feathering propeller system. These requirements from the 2004 rule provided for simple designs that would be appropriate for a sport pilot to operate.

With the performance expansions proposed in this rule for the design and certification of light-sport category aircraft, as well as the decoupling from sport pilot aircraft limitations tied to the light-sport aircraft § 1.1 definition, there would no longer be a need to restrict propeller designs for light-sport category aircraft. This proposed rule would omit propeller limitations from the light-sport category eligibility requirements in § 22.100. Accordingly, this proposed rule would allow light-sport category aircraft to be built with any type of propeller design that meets an FAA-accepted consensus standard.<sup>19</sup>

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<sup>19</sup> ASTM standard F2506 - Standard Specification for Design and Testing of Light Sport Aircraft Propellers.



Although the operation of controllable-pitch propellers and their associated systems can impose some additional workload on pilots, the FAA considers these propeller designs to be safe and reliable, as they have been used in general aviation aircraft for decades. While controllable-pitch propeller designs can increase workload because they require attention and adjustment by the pilot, the FAA considers the overall design of these systems to be relatively simple to operate and appropriate for inclusion in light-sport category aircraft.

However, proposed § 61.316, which would provide the performance and design limitations for aircraft that may be flown by sport pilots, would retain some propeller limitations and training requirements for sport pilots. Specifically, for powered aircraft other than powered gliders, proposed § 61.316 would permit sport pilots to fly aircraft with a fixed or ground-adjustable propeller, but also allow those with an automated controllable-pitch propeller. Aircraft with an automated controllable-pitch propeller would enable pilots to take advantage of the improved performance associated with these aircraft without imposing additional workload. The current requirement for powered gliders would be relocated to proposed § 61.316.

Due to the significant increase in climb and cruise performance, the FAA is also proposing to permit sport pilots who receive additional training and an instructor endorsement to operate airplanes designed with controllable-pitch propellers that are not automated. The FAA contends that permitting the design and use of a controllable-pitch propeller on airplanes increases safety by taking advantage of the improved climb performance associated with that propeller system design to avoid and clear obstacles during the climb and departure phase of a flight.

The FAA proposes two allowances to this requirement in the proposed § 61.316(e). First, the FAA proposes that, for powered aircraft other than powered gliders, the airplane may also be equipped with an automated controllable-pitch propeller.

These propellers are easy to use and increase airplane performance and efficiency. Specifically, allowing use of an automated controllable-pitch propeller, in addition to fixed or ground-adjustable propellers, increases safety because of increased climb and cruise performance associated with a controllable pitch propeller design.

Second, under the proposed § 61.331, sport pilots would be required to obtain additional flight training and a flight instructor endorsement validating sport pilot proficiency to operate an airplane with a controllable-pitch propeller that is not automated. The FAA contends that additional training and instructor endorsements would appropriately validate that sport pilots can safely operate airplanes with a manually operated controllable-pitch propeller.

#### 8. Fixed-Pitch, Semi-Rigid, Teetering-Two Blade Rotor System (If a Gyroplane)

The current § 1.1 definition of light-sport aircraft requires gyroplanes to have fixed-pitch, semi-rigid, teetering two blade rotor systems. This proposal would omit this as an eligibility requirement in § 22.100 to enable industry to develop new designs for gyroplane rotor systems. However, under proposed § 61.316(a)(6), the FAA would continue to limit sport pilots to operate gyroplanes that have a fixed-pitch, semi-rigid, teetering-two blade rotor system.

#### 9. Retractable Landing Gear

Per the current light-sport aircraft definition in § 1.1, a light-sport aircraft, except for an aircraft intended for operation on water or a glider, must have a fixed landing gear. The proposed rule would remove this limitation as an eligibility requirement in § 22.100. Accordingly, this rule would allow light-sport category aircraft to be designed with fixed or retractable landing gear, or with floats for aircraft intended for operation on water.

In the 2004 rule, the requirement for fixed landing gear was intended to enable aircraft designs that would be simple to operate by persons exercising the privileges of a sport pilot certificate. With the performance expansions proposed in this rule for the

design of light-sport category aircraft and the decoupling from sport pilot restrictions, there is no longer a need to restrict light-sport category aircraft to fixed landing gear. This rule would provide for more robust structures and greater weight allowances that would accommodate necessary enhancements needed for retractable landing gear.

The FAA recognizes that additional training and instructor endorsements can validate that sport pilots can operate aircraft with retractable landing gear safely. The FAA is proposing to permit sport pilots to operate aircraft with a retractable landing gear by requiring additional training and obtaining a flight instructor endorsement validating proficiency, as discussed later in section IV.E. By proposing to establish separate airman and aircraft certification requirements, manufacturers would be provided with the ability to create a wider range of aircraft designs that may be operated by any appropriately rated pilot. Pilots could then pursue the appropriate level of pilot certification necessary to operate light-sport category aircraft and any other aircraft. This would enable greater flexibility for both aircraft manufacturers and pilots.

#### D. Certification of Light-Sport Category Aircraft

##### 1. Compliance with Design, Production, and Airworthiness Requirements

As a condition for eligibility for certification in the light-sport category, the proposal would require an aircraft to meet performance-based aircraft design, production, and airworthiness requirements using a means of compliance consisting of consensus standards accepted by the FAA. The proposal would provide the regulatory authority to deny airworthiness certification for a light-sport category aircraft if any applicable requirements in § 21.190(c) or part 22 have not been met. The proposed performance-based requirements are discussed further in section IV.D.

##### 2. Establishment of Performance-Based Requirements

This proposal would include performance-based requirements for the certification of aircraft in the light-sport category. The FAA would evaluate any proposed consensus

standard against the regulatory requirement to determine whether the consensus standard would constitute an acceptable means of compliance. By proposing these performance-based requirements, the FAA would be providing clear direction to standards-setting organizations regarding the content of consensus standards that would be proposed as a means of compliance to meet regulatory requirements. The FAA expects that this proposal should not only facilitate the more rapid development of these consensus standards, but also result in more comprehensive consensus standards that are better able to address the design, production, and airworthiness of aircraft intended for certification in the light-sport category.

The design, production, and airworthiness requirements proposed in part 22 would represent the minimum requirements a consensus standard would be required to address to be an acceptable means of compliance for certification of light-sport category aircraft. The proposed requirements would enable the implementation of new technologies and encourage innovation. This proposed rule would allow manufacturers to incorporate new technologies in their aircraft due to the removal of a prescriptive weight limit that previously limited the installation of safety equipment. This proposed rule would also encourage innovation, such as aircraft designed with simplified flight controls discussed in proposed § 22.180. The requirements proposed in this section would provide safety requirements appropriate for the light-sport category within the context of the FAA's safety continuum. A discussion of each proposed performance-based requirement follows.

### 3. Performance-Based Requirements for the Certification of Light-Sport Category

#### Aircraft

##### a. General

The proposed expansion of the classes of aircraft eligible for certification under the proposal and the increase in the size and performance of these aircraft requires the

adoption and use of more detailed performance-based requirements. These new requirements would serve to guide consensus standards bodies in developing appropriate consensus standards that would be acceptable to the FAA for the expanded certification of aircraft in the light-sport category.

Manufacturer compliance with the performance-based design, production, and airworthiness requirements proposed in this NPRM is necessary for the safety of the wide range of light-sport category aircraft to be certificated under this proposal. The FAA expects that compliance with these requirements would reduce the occurrence of design and production defects, resulting in aircraft that are safe for their intended operations.

In accordance with their place in the safety continuum, light-sport category aircraft would be subject to a certification process more stringent than that applicable to experimental amateur-built aircraft, but less rigorous than that used for the certification of normal category aircraft. When comparing current certification requirements for light-sport category aircraft to the certification requirements applicable to other aircraft, amateur-built aircraft issued experimental airworthiness certificates are not required to meet performance-based design, production, and airworthiness requirements that light-sport category aircraft would be required to meet. As experimental aircraft occupy a level on the safety continuum with a lesser demand for safety assurance than light-sport category aircraft, amateur-built aircraft are subject to more stringent operating limitations. In contrast, aircraft issued standard airworthiness certificates are required to meet airworthiness standards contained in part 23, 25, 27, 29, or 31 and must be produced pursuant to an FAA design and production approval. Accordingly, normal category aircraft are subject to fewer operating restrictions than light-sport category aircraft. As light-sport category aircraft would not be designed or manufactured pursuant to an FAA design or production approval, these aircraft would be subject to the eligibility

requirements in proposed § 22.100 and the more restrictive operating limitations in proposed § 91.327.

The FAA retains oversight authority of light-sport category aircraft manufacturers. Like certification rigor, the rigor of FAA oversight of light-sport category aircraft manufacturers would be consistent with the safety continuum. Policies and procedures for that oversight are included in FAA Order 8130.36.<sup>20</sup> To support this proposed rule, the FAA would expand its oversight to verify successful accomplishment of training by the manufacturer's compliance staff per proposed § 22.190, as well as the training and certification of manufacturer's staff who sign its statements of compliance in proposed § 21.190(d)(1).

The FAA does not believe it would be appropriate to include the proposed performance-based design, production, and airworthiness requirements within current part 21 as that part is largely limited to prescribing certification procedures, not certification requirements. Accordingly, the FAA is proposing to include these requirements within subpart B of part 22. By placing these new design, production, and airworthiness requirements within separate sections of part 22, each functional requirement would be more readily discernable to users, be better able to be individually addressed, and result in the development of a clearer and more understandable manufacturer's statement of compliance.

With certain exceptions, part 22 would apply to non-type certificated aircraft. As aircraft with experimental airworthiness certificates are not certificated using performance-based requirements, proposed part 22 would not be applicable to those aircraft. Additionally, the proposed part would not be applicable to aircraft operating under a special flight permit. Although those permits are issued to aircraft that are safe for flight, aircraft operating under a special flight permit do not have to meet applicable

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<sup>20</sup> FAA Order 8130.36, Special Light Sport Aircraft Audit Program.

airworthiness requirements. Part 22 would also not be applicable to unmanned aircraft, as the proposed requirements would address the design, production, and airworthiness of aircraft used to carry passengers and would not be appropriate to address the design of an aircraft that could be remotely operated. Requirements for manned aircraft, for example, would need to address occupant protection and egress while proposed requirements for unmanned aircraft would need to address certain flight control system requirements that would be inapplicable to manned aircraft. The FAA notes, however, that requirements for non-type certificated unmanned aircraft could be proposed at a later date.

The FAA has accepted a variety of ASTM consensus standards for the certification of light-sport category aircraft. The FAA has found these consensus standards to be sufficient for the certification of aircraft that meet current eligibility requirements. The FAA has also reviewed currently accepted ASTM consensus standards and evaluated them against the proposed performance expansions and new aircraft designs that would be eligible for certification as light-sport category aircraft. Currently accepted consensus standards would not be sufficient for the certification of the wide range of aircraft with enhanced performance capabilities that could be certificated under this proposal. The FAA anticipates that industry would develop acceptable and appropriate consensus standards to comply with the proposed performance-based requirements in part 22. These proposed performance-based requirements would serve as the underlying regulatory requirements for the development of new or revised consensus standards.

The FAA currently uses performance-based requirements for the certification of other aircraft, most notably normal category airplanes certificated under the requirements of part 23. The FAA recognizes that the performance-based requirements it is proposing for certifying light-sport category aircraft are not of the same scope and detail as those standards. The FAA contends, however, that the greater specificity contained in the

part 23 standards reflects the increased rigor of the type certification process and resultant need to develop more detailed consensus standards to comply with those more detailed requirements. The performance-based requirements proposed in this NPRM respond to the need to apply a set of broad-based requirements to a wider range of aircraft that would not be required to meet the more exacting design requirements of type certification. They also provide industry with the flexibility to develop consensus standards applicable to the certification of a wide range of dissimilar aircraft.

Under the proposed rule, a consensus standard would have to meet the following performance-based requirements before the FAA would accept that standard as a means of compliance. A manufacturer would need to meet the appropriate FAA-accepted consensus standards to obtain an airworthiness certificate in the light-sport category.

b. Control and Maneuverability

Proposed § 22.105 would require aircraft to be consistently and predictably controllable and maneuverable through the normal use of primary flight controls at all loading conditions, during all phases of flight. Additionally, the aircraft would not have a tendency to inadvertently depart controlled flight or require exceptional piloting skill, alertness, or strength.

The proposed rule is necessary because if the aircraft's design prevents the pilot from inadvertently departing controlled flight, instances of unintentional unusual attitudes, loss of control of the aircraft, or aircraft structural damage would be reduced. A requirement for control and maneuverability would assist with the consistency and predictability of an aircraft's maneuvering flight characteristics throughout the aircraft's entire flight envelope. The aircraft would not have a tendency to depart controlled flight, meaning that it should be inherently stable. Additionally, the FAA considers that this requirement would result in aircraft that operate in repeatable, smooth transitions between turns, climbs, descents, and level flight.



Accordingly, flight controls would need to operate easily, smoothly, and positively enough to allow proper performance of their functions. Configuration changes, such as flap extension and retraction, or landing gear extension and retraction would also have to result in safe, controllable, and predictable handling characteristics. The proposed performance requirement would also enable stability, ease of flight, and consistent outcomes of control inputs for light-sport category aircraft throughout their center of gravity limits and flight envelope. The FAA considers that if an aircraft meets these parameters, exceptional piloting skill, alertness, or strength would not be required to operate the aircraft.

The FAA has accepted consensus standards for current light-sport category aircraft that address the controllability and maneuverability of aircraft intended for certification as light-sport category aircraft.<sup>21</sup> Although the controllability and maneuverability standards vary across the consensus standards for the different classes of light-sport category aircraft, the general provisions of these standards align closely with the elements of proposed § 22.105. The consensus standards currently address controllability and maneuverability, applicable phases of flight, pilot strength and skill, and normal use of flight controls. Proposed § 22.105 would meet the level of rigor the FAA considers appropriate for light-sport category aircraft and its place on the safety continuum between experimental aircraft and normal category airplanes. Proposed § 22.105 would require light-sport category aircraft to be controllable and maneuverable with no adverse handling characteristics. In this context, no adverse handling characteristics would mean the aircraft would be consistently and predictably controllable and maneuverable and would not have a tendency to inadvertently depart controlled flight.

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<sup>21</sup>ASTM F2245 Standard Specification for Design and Performance of a Light Sport Airplane; ASTM F2564 Standard Specification for Design and Performance of a Light Sport Glider; ASTM F2317/F2317M Standard Specification for Design of Weight-Shift-Control Aircraft, ASTM F2244 Standard Specification for Design and Performance Requirements for Powered Parachute Aircraft, and ASTM F2355 Standard Specification for Design and Performance Requirements for Lighter-Than-Air Light Sport Aircraft.

The FAA expects that some existing consensus standards would need to be updated to account for the proposed expansion of eligibility for aircraft to be certified as light-sport category aircraft. Additionally, those portions of currently accepted consensus standards addressing aircraft controllability and maneuverability would need to be updated to address the specific requirement that aircraft control and maneuverability be consistent and predictable.

The proposed rule would facilitate the manufacture of simple designs that result in the stable, predictable, and controllable operation of the aircraft through the use of primary flight controls. Primary flight controls consist of “traditional” flight controls, such as an aircraft yoke, stick, control column, collective, throttle, or rudder pedals. Flight controls intended to improve aircraft performance characteristics or relieve excessive control loading, such as high lift devices, slats, flaps, flight spoilers, and aircraft trim systems, would not be considered primary flight controls. The proposed rule would also contain specific provisions for the certification of aircraft that may be designed and constructed without primary flight controls, but rather with “simplified flight controls.” Specific requirements for aircraft with simplified flight controls are addressed in proposed § 22.180 in the preamble.

The proposed rule would require that existing consensus standards be revised to account for the requirement that operation of the aircraft not require exceptional piloting skill, alertness, or strength. Aircraft meeting this performance requirement would be stable enough to be easily flown by pilots with a minimum of flight experience and would not have handling characteristics that would cause undue pilot fatigue or distraction. Accordingly, these aircraft would provide a more stable platform than other currently available non-type certificated aircraft, thereby aiding in preventing inadvertent loss of control accidents. Although some consensus standards specifically address the forces necessary to pilot the aircraft, not all existing consensus standards meet this

requirement. The proposed rule would require that aircraft certificated in the light-sport category have aerodynamic and handling qualities that would not result in unstable flight characteristics or require exceptional pilot skill to keep the aircraft within its flight envelope.

Additionally, the handling characteristics of these aircraft would make light-sport category aircraft a viable alternative for use in the flight training environment and provide both student pilots and flight schools with a potentially lower cost, alternate flight training platform. Although the proposed rule would permit the use of technology to enhance the flying qualities of the aircraft, the technology should also not increase the pilot's workload to the detriment of the goal to have simple and easy to fly aircraft. The pilot should not be task-saturated in maintaining control of these aircraft.

Proposed § 22.105 would help prevent inadvertent unusual attitudes and loss of control accidents. Per National Transportation Safety Board (NTSB) accident statistics, the largest number of fatal accidents for general aviation aircraft result from inflight loss of control; the proposed standard would result in the development of consensus standards for light-sport category aircraft that would assist in mitigating this risk.

Powered-lift or certain rotorcraft that could experience failures resulting in asymmetric thrust would need to be designed with safe, controllable, and predictable characteristics that permit a pilot with limited flight experience from becoming task-saturated while maintaining control of the aircraft. The aircraft could also be designed and constructed to include an automated system or provide for some combination of pilot action and automation that would enable the pilot to maintain effective aircraft control. The provisions of this proposed requirement would be consistent with proposed § 22.145, which would require that any propulsion system thrust asymmetry be automatically compensated for, or be capable of being readily compensated for, with no adverse effect on the aircraft's handling qualities.

### c. Structural Integrity

Proposed § 22.110 would require that the design and construction of the aircraft provide sufficient structural integrity to enable safe operations within the aircraft's flight envelope and intended lifecycle. It would also require that the aircraft be able to withstand all anticipated flight and ground loads when operated within its operational limits.

The proposed performance requirements are necessary to ensure that light-sport category aircraft are designed and constructed to withstand any foreseeable flight and ground loads that may be experienced throughout the aircraft's flight envelope and intended lifecycle. Failure to establish and validate adequate strength, stiffness, and durability to accommodate anticipated loads encountered during flight or ground operations could result in structural failure of the aircraft.

When comparing the proposed requirements for the certification of light-sport category aircraft to the certification of amateur-built aircraft, the FAA notes that amateur-built aircraft have no regulatory requirement to incorporate design features or be constructed to provide sufficient structural integrity for their intended operations. Amateur builders may experiment with different materials and construction techniques in the design and construction of their aircraft. In contrast, type-certificated aircraft must meet the extensive airworthiness standards for structures in parts 23, 25, 27, 29, and 31 that address areas such as strength, durability, design envelope, loads, aeroelasticity, materials, protection, fabrication processes, and performance. The level of rigor proposed for the structural integrity of light-sport category aircraft would not be as extensive as that required for aircraft intended for type-certification yet would establish minimum requirements for structural integrity that are not applicable to the certification of amateur-built aircraft.

FAA-accepted consensus standards currently used for the certification of light-sport category aircraft have provisions addressing structures that generally include provisions for items such as loads, factors of safety, strength and deformation, proof of structure, flight loads, design airspeeds, specialized structures, and emergency landing conditions.<sup>22</sup> As a result of the expansion in the performance and capabilities of aircraft that would be certificated as light-sport category aircraft under the proposal, the proposed requirements would require consensus standards for light-sport category aircraft designs to address aircraft structural integrity under a wider range of environmental conditions and operational parameters. Additionally, the prevention of material and structural failures due to foreseeable causes of strength degradation and protection against deterioration or loss of structural strength due to any cause likely to occur throughout the aircraft's lifecycle would also need to be addressed by consensus standards organizations.

The proposed rule would require the aircraft to have the ability to withstand all anticipated flight and ground loads without detrimental permanent deformation or interference with the safe operation of the aircraft. The inclusion of a requirement to address structural integrity in light-sport category aircraft designs would improve the ability of these aircraft to be consistently dependable, structurally reliable, and fully capable of safely conducting intended operations throughout the aircraft's lifecycle. The proposed requirements would enable aircraft design and manufacturing processes used in construction to attain structural integrity of aircraft with the use of adequate material strength and properties that can accommodate anticipated loads when operated within specified flight envelopes.

#### d. Powered-lift Aircraft: Minimum Safe Speed

Proposed § 22.115 would require manufacturers of powered-lift aircraft to establish the minimum safe speed for each flight condition encountered in normal

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<sup>22</sup>ASTM F2245, F2564, F2317/F2317M, F2244, and F2355.

operation, including applicable sources of lift and phases of flight, to maintain controlled safe flight. The minimum safe speed determination would be required to account for the most adverse conditions for each configuration.

Because powered-lift aircraft would be newly eligible for certification as light-sport category aircraft, the FAA has proposed this specific requirement for powered-lift aircraft. The proposed rule is necessary for pilots of these aircraft to be aware of the specific minimum safe speeds at which their specific model of powered-lift aircraft can be operated in each of the aircraft's various configurations. Requiring these speeds to be determined would provide pilots with the essential knowledge to avoid operating these aircraft below minimum safe speeds, thereby reducing the potential for aircraft loss of control.

The proposed requirement to determine minimum safe speeds for powered-lift aircraft addresses all modes of flight (wing-borne, thrust-borne, and semi-thrust borne) in which these aircraft may be operated and the various modes in which lift supporting the aircraft is produced. In the wing-borne flight mode, the wing produces the aircraft's lift. In thrust-borne flight, commonly called hover mode, the powerplant produces the aircraft's lift. In the semi-thrust borne mode, the aircraft is in a transition stage between thrust-borne and wing-borne modes of flight with both the wings and powerplant providing aircraft lift. Although most powered-lift aircraft are designed with the ability to automatically transition from high-speed wing-borne flight to slow-speed thrust-borne flight or hover, the proposed requirement would further the pilot's understanding of the handling qualities of the aircraft and facilitate their ability to make a smooth change from one configuration to another without exceeding the limitations of the aircraft's flight envelope.

The FAA does not consider the imposition of a limiting stalling speed or minimum steady flight speed such as  $V_{S1}$  to be practical for application to the design of

powered-lift aircraft that would be eligible for certification as light-sport category aircraft. Many of the designs for these smaller powered-lift aircraft have wing sizes that do not provide significant lift in wing-borne flight. As a result of this small wing area and other design features, these aircraft may have stalling or minimum steady flight speeds that are much higher than comparably sized aircraft of other classes that rely primarily on wings to produce lift. Accordingly, the FAA considers the use of a maximum stalling speed as a limitation for these aircraft to be unnecessary.

As powered-lift aircraft can be operated in a variety of flight configurations, the FAA considers the determination of a minimum safe flight speed for each flight condition to be essential. Similar requirements for the determination of minimum flight speeds have also been proposed in two *Federal Register* notices of proposed airworthiness criteria for powered-lift aircraft designs currently involved in the type-certification process.<sup>23</sup> The more extensive requirements set forth in the airworthiness criteria for these powered-lift aircraft designs currently undergoing type-certification would not be required since aircraft subject to this proposal would be certificated as light-sport category aircraft and subject to the operating limitations contained in proposed § 91.327.

The proposed requirement is necessary so that the aircraft has controllable minimum safe speed flight characteristics in all flight conditions with a clear and distinctive minimum safe speed warning that provides sufficient margin to prevent inadvertent deceleration below minimum safe speed. Production acceptance flight testing would verify that the minimum safe speeds account for the most adverse conditions, such as operating at maximum gross weight, in the determination of the minimum safe speeds for each flight condition.

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<sup>23</sup> Airworthiness Criteria: Special Class Airworthiness Criteria for the Joby Aero, Inc. Model JAS4-1 Powered-Lift (87 FR 67399; November 8, 2022), and Airworthiness Criteria: Special Class Airworthiness Criteria for the Archer Aviation Inc. Model M001 Powered-Lift (87 FR 77749; December 20, 2022).

#### 4. Special Requirements for Light-Sport Category Aircraft Used for Aerial Work

##### Operations

Proposed § 22.120 would require that if an aircraft is designated by the manufacturer as suitable for the performance of any aerial work operation, the design and construction of the aircraft must provide sufficient structural integrity to enable safe operation of the aircraft during the performance of that operation and ensure that the aircraft is able to withstand foreseeable flight and ground loads.<sup>24</sup>

The FAA broadly interprets the term aerial work to mean work done from the air for compensation that does not involve the carriage of persons or property.<sup>25</sup> Aerial work could include operations such as those performed in support of agriculture or construction activities, aerial photography, surveying, observation and patrol, search and rescue, and aerial advertisement. Patrolling of powerlines or railroad tracks, for example is a task that could be readily accomplished by a light-sport category aircraft that meets the proposed requirements. However, patrolling over long distances and at low altitudes can put increased stresses on aircraft structures due to the greater prevalence of turbulence at low altitude. The proposal would require manufacturers to design and construct aircraft to be able to withstand potentially greater stresses when engaged in designated aerial work operations than would potentially be experienced during recreational flights.

This proposed performance requirement is necessary so that aircraft designated to conduct aerial work operations are designed and constructed to withstand foreseeable flight and ground loads that may be experienced during those operations. Failure to establish and validate adequate material strength and design properties to accommodate a

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<sup>24</sup> The FAA does not define construction or manufacture in § 1.1. The terms are used interchangeably in this section and mean the same.

<sup>25</sup> FAA Order 8900.1, Volume 2, Chapter 2, Section 2, Paragraph 2-127C *Aerial Work Operations*. While 14 CFR does not define "aerial work," the FAA has consistently interpreted the term to mean work done from the air where: the aircraft must depart and arrive at the same point; no property of another may be carried on the aircraft; and only persons essential to the operation may be carried on board. See Legal Interpretation to Jeffrey Hill, from Rebecca B. MacPherson, Assistant Chief Counsel for Regulations, (March 10, 2011). See 14 CFR 119.1(e)(4).



designated aerial work operation could cause structural failure resulting in loss of aircraft control.

The proposed requirement would only apply to those light-sport category aircraft designated by a manufacturer to conduct specific aerial work operations. In accordance with the principles of the FAA's safety continuum, the proposed requirement is intended to apply a level of certification rigor appropriate to provide for the airworthiness of light-sport category aircraft during the conduct of these designated operations.

Amateur-built aircraft issued experimental airworthiness certificates have no regulatory requirement to incorporate design features necessary to provide sufficient structural integrity of the aircraft to enable safe aerial work operations. These aircraft are built solely for the purpose of education or recreation and are issued operating limitations which limit their use to education or recreation. Accordingly, aircraft issued these operating limitations are prohibited from aerial work operations by § 91.9, which prohibits the operation of a civil aircraft contrary to its operating limitations. In contrast, type-certificated aircraft meeting the airworthiness standards for structures in part 23, 25, 27, 29, or 31 may be used to conduct aerial work operations since these aircraft are issued standard airworthiness certificate and are not restricted by operating limitations that restrict their use to recreation or education or by regulatory provisions limiting their ability to carry persons or property for compensation or hire as set forth in § 91.319(a)(2).

Light-sport category aircraft are currently precluded by § 91.327 from conducting operations for compensation or hire, except to tow a glider or an unpowered ultralight vehicle or to conduct flight training. As the proposal would enable aerial work operations, the proposal would revise § 91.327 to permit the conduct of any aerial work operation specified in the aircraft's pilot operating handbook or operating limitations, as applicable, and specified in the manufacturer's statement of compliance for that aircraft.

The aircraft's design and construction would need to be sufficient to protect against deterioration or loss of strength and prevent structural failures due to foreseeable causes of strength degradation that would be likely to occur throughout the aircraft's flight envelope during aerial work operations. Additionally, the aircraft would need to be able to withstand all anticipated flight and ground loads during these operations without incurring detrimental permanent deformation or jeopardizing the safe operation of the aircraft. Failure to adhere to proper design and manufacturing processes in the development and production of parts or using materials not suitable or lacking durability for in-service environmental conditions in aerial work operations could result in loss of aircraft performance or critical functionality, thereby resulting in loss of aircraft control. Accordingly, these concerns would be appropriately addressed in the aircraft's design and manufacture under this proposal.

#### 5. Environmental Conditions

Proposed § 22.125 would require the aircraft to have design characteristics to safely accommodate all environmental conditions likely to be encountered during its intended operations.

The proposed requirement is necessary to enable aircraft to be properly designed and constructed to conduct safe ground and flight operations in the specific operating environments for which the aircraft is designated to operate in. Manufacturers would need to account for weather extremes encountered within the United States and the designed maximum altitude of the aircraft to comply with this requirement. Aircraft systems and structures may not function as intended if all operating conditions are not accounted for in an aircraft's design. Improperly functioning systems or structures may lead to loss of aircraft control and an aircraft accident or incident.

There are no regulatory requirements for amateur-built aircraft to be designed with characteristics necessary to safely accommodate environmental conditions. If an

amateur-built aircraft has been designed for flight at night or instrument meteorological conditions (IMC) as specified in its operating manual, the aircraft would be issued an operating limitation under the regulatory authority of § 91.319(i) specifying that it must meet the instrument and equipment requirements of § 91.205.

In contrast, aircraft manufactured in accordance with the airworthiness standards set forth in part 23, 25, 27, or 29 are subject to specific design and installation requirements for systems and equipment. Installed systems and equipment must perform their intended function throughout the operating and environmental limits for which the aircraft is certificated. Based on the performance level of the aircraft, other environmental airworthiness requirements are required to be met such as for flight in icing conditions, cockpit and external lighting for night operations, and flight in turbulent or gusty wind conditions. Additionally, balloons manufactured in accordance with the airworthiness requirements of part 31 must be suitably protected, as set forth in § 31.39, against deterioration or loss of strength in service due to weathering, corrosion, or other causes.

Proposed § 22.105 would meet the level of rigor the FAA considers appropriate for light-sport category aircraft and its place on the safety continuum between amateur-built aircraft and normal category aircraft. Currently accepted consensus standards for light-sport category aircraft generally do not address design characteristics to accommodate environmental conditions. This is largely the result of these aircraft being limited to operating in day, visual meteorological conditions (VMC). The single major exception can be found in ASTM standard F2245, “Standard Specification for Design and Performance of a Light Sport Airplane,” for light-sport category airplanes, which provides for the installation of internal and external lights for the conduct of night operations in VMC.

As a result of the expansion in the performance and capabilities of aircraft that would be certificated as light-sport category aircraft under the proposal, the FAA would

require light-sport category aircraft designs, structures, and systems to account for the effects of any environmental conditions expected to be encountered while in operation. Examples of environmental conditions that should be accommodated in the aircraft design include heat, cold, precipitation, sunlight, darkness, gusty winds, and turbulence. In this proposal, performance expansions would enable light-sport category aircraft to be equipped with engines and systems capable of flight under instrument flight rules (IFR) in IMC. Additionally, state-of-the-art avionics systems could be installed in these aircraft which would require aircraft designs to provide for the necessary heating and cooling of this electronic equipment. Aircraft designs that fail to accommodate extreme temperature limits of systems may lead to operations outside the environmental limits of critical components, which could adversely affect control of the aircraft.

Aircraft designs must also protect occupants from experiencing inappropriate environmental conditions within the aircraft that could significantly affect their well-being or adversely affect pilot performance. While the effects of heat and cold are well known, designs should also consider other factors such as reducing the effects of windshield glare that could impair pilot vision both inside and outside the aircraft.

The recommended operating instructions and limitations to safely accommodate all environmental conditions and abnormal procedures likely to be encountered in the aircraft's intended operations, such as gusty winds, contaminated runways, turbulence, icing conditions, or excessive temperatures, would be required to be specified in the pilot's operating handbook, as proposed in § 21.190(c)(2)(i) of this proposal. These requirements are proposed for the safe operation of the aircraft within the environmental parameters for which it is designed to operate.

## 6. Suitability and Durability of Materials

Proposed § 22.130 would require that the suitability and durability of materials used for products and articles account for likely environmental conditions expected in service, the failure of which could prevent continued safe flight and landing.<sup>26</sup>

Materials used for aircraft components and structures would need to meet the rigors of all operations within the aircraft's flight envelope for the life of the aircraft, or for the specified life limit of the product or article in which the material is used. Pursuant to proposed § 22.130, aircraft would be designed and manufactured with materials that permit its structure and components to withstand those stresses likely to be encountered within the aircraft's flight envelope. Such stresses could include high load factors resulting from gusts or temperature and humidity extremes. Compliance with material suitability and durability requirements is especially important for critical structures and components whose failure could prevent continued safe flight and landing.

Manufacturer design data defines the configuration of each product or article, its design features, and any materials and processes used in its manufacture. In the selection of materials used for the aircraft's manufacture, manufacturers would have to account for the full range of conditions likely to be encountered within aircraft's design flight envelope for compliance with the proposed § 22.130. Design data would include a determination of the suitability and durability of materials used for the production of each product or article for the full range of the aircraft's authorized operations. Additionally, materials selected for the manufacture of the aircraft's structure and components would need to be sufficient to protect those items against deterioration or loss of strength due to any condition likely to be encountered in the aircraft's expected operational environment.

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<sup>26</sup> As defined in part 21, product means an aircraft, aircraft engine, or propeller. Article means a material, part, component, process, or appliance. Appliance is defined in § 1.1 and means any instrument, mechanism, equipment, part, apparatus, appurtenance, or accessory, including communications equipment, that is used or intended to be used in operating or controlling an aircraft in flight, is installed in or attached to the aircraft, and is not part of an airframe, engine, or propeller.

Amateur-built aircraft issued experimental airworthiness certificates have no regulatory requirement to address the suitability and durability of materials to account for the environmental conditions expected to be encountered within the aircraft's operational flight envelope. In contrast, type-certificated aircraft must comply with material suitability and durability requirements specified in the airworthiness standards of parts 23, 25, 27, 29, and 31. In accordance with the principles set forth in the FAA's safety continuum, the proposed requirements have been designed to meet the level of rigor the agency considers appropriate to address the suitability and durability of materials used in the manufacture of aircraft intended for certification as light-sport category aircraft.

Currently accepted consensus standards for all classes of light-sport category aircraft include a design and construction performance requirement, which generally states that materials shall be suitable and durable for the intended use.<sup>27</sup> Those consensus standards specify that design values for strength must be chosen so that no structural part is understrength because of either material variations or load concentration. Consensus standards for all classes of aircraft eligible for certification as light-sport category aircraft also include protection of the aircraft's structure.<sup>28</sup> These consensus standards generally address the protection of the structure against weathering, corrosion, and wear, as well as provisions for suitable ventilation and drainage. As the suitability and durability of materials used for products and articles would be required to account for likely environmental conditions expected in service, the FAA expects that revisions to these consensus standards would need to be made to account for the significant increase in the performance, capabilities, and classes of aircraft that could be certificated under the proposal. Accordingly, revised consensus standards would need to address aircraft with significantly larger flight envelopes. This would result in materials being used in the

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<sup>27</sup>ASTM 2245, F2564, F2317/F2317M, F2244, and F2355.

<sup>28</sup> ASTM F2245, F2564, F2317/F2317M, F2244, and F2355.

aircraft possessing the suitability and durability to permit the safe operation of the aircraft throughout the wider range of environmental conditions likely to be encountered.

#### 7. Instruments and Equipment

Proposed § 22.135 would require that the aircraft have all instruments and equipment necessary for safe flight, including those instruments necessary for systems control and management. It would also require that the aircraft include all instruments and equipment required for the kinds of operations for which it is authorized. All instruments, equipment, and systems would be required to perform their intended functions under all operating conditions specified in the pilot's operating handbook. The proposal would also require that a failure or malfunction of a system or component that is likely to occur would not cause loss of control of the aircraft. All systems and components would be required to be considered separately and in relation to each other.

Aircraft certificated as light-sport category aircraft are currently required to use a consensus standard for all required equipment, pursuant to the definition of consensus standard in § 1.1. This proposal would remove reference to equipment from the definition of consensus standard and place that requirement in § 22.135. The proposed equipment requirements are necessary so that light-sport category aircraft would have installed equipment that enables the pilot to accomplish tasks such as monitoring, managing, controlling, or responding to the aircraft and its systems under all operating conditions.

For amateur-built aircraft issued experimental airworthiness certificates, no regulatory requirement exists for the aircraft's installed instruments and equipment to meet specific design requirements. However, amateur-built aircraft must comply with regulatory instrument and equipment requirements for operations in certain environmental conditions and airspace as specified in their operating limitations or as required by the applicable operating rules. For example, amateur-built aircraft designed and equipped for flight at night or under IFR may be issued an operating limitation

stating that the aircraft must comply with the applicable instrument and equipment requirements of § 91.205. Operating in certain airspace requires that the aircraft meet the transponder equipage requirements specified in § 91.215 and the Automatic Dependent Surveillance-Broadcast (ADS-B) Out requirements specified in § 91.225.

Type-certificated aircraft must meet the instrument and equipment airworthiness standards in parts 23, 25, 27, 29, and 31 for the types of operations for which certification is requested. Type-certificated aircraft must also comply with the instrument and equipment requirements in §§ 91.205, 91.215, and 91.225 for operations at night, in IMC, or certain airspace, as applicable.

The level of rigor specified for the design of the instrumentation and equipment installed in light-sport category aircraft would not be as extensive as that required for aircraft intended for type-certification, yet more extensive than that specified for amateur-built aircraft. Proposed § 22.135 would account for the fact that necessary instrumentation and equipage for light-sport category aircraft will vary by the class of aircraft and type of operation. Specifically, § 22.135, as proposed, states that aircraft must include all instruments and equipment required for the kinds of operations for which it is authorized. Minimum equipment generally includes flight and navigation instruments, powerplant instruments, and other miscellaneous equipment necessary for the operation of the aircraft's systems. Miscellaneous equipment is usually specific to the class of aircraft. Such equipment associated with the aircraft's electrical system, for example, could include master switches, wiring, and vented battery containers.

The FAA expects that light-sport category aircraft possessing significantly more capabilities than current designs would need to be appropriately equipped in accordance with these increased operational capabilities. Aircraft would be able to conduct IFR flight in IMC and be more likely to be exposed to adverse weather conditions and operations at night. The FAA does note, however, that flight in IMC would have to be authorized by



the manufacturer in the pilot's operating handbook and the aircraft would be subject to an operating limitation requiring the aircraft to be equipped to meet the equipment and instrumentation requirements in § 91.205. Additionally, light-sport category aircraft would also be more prone to fly in airspace requiring transponders and ADS-B equipment as aircraft designers may be more willing to install this equipment. This equipment enhances safety of the national airspace system by making an aircraft visible to air traffic control and to other appropriately equipped aircraft, promoting the separation of aircraft, and decreasing the risk of mid-air collision.

All classes of light-sport category aircraft would need to be properly equipped for operations they are authorized to conduct. For example, if an aircraft is authorized to operate at night, the requirement to have all instruments and equipment necessary for safe flight would necessitate the aircraft be equipped with internal cockpit lighting that would provide the pilot with unrestricted visibility of all required instruments. It would also be required to have external lighting to make the aircraft visible to both operators of other aircraft and to personnel on the ground while operating on or within the vicinity of the airfield.

The FAA encourages aircraft designers to incorporate new instrument and equipment technology into their aircraft designs. The proposed rule is intended to address both the functionality of instruments and equipment, as well as their interface with the other instruments and equipment installed in the aircraft. The FAA particularly encourages the installation of advanced electronic avionics systems that can be used by pilots to meet the aeronautical experience requirements in a technologically advanced aircraft as specified in § 61.129. As aircraft designers would no longer be bound by the parameters contained in the current definition of light-sport aircraft, designers would be better able to include safety-enhancing equipment in their designs, such as angle-of-attack indicators, envelope-protection equipment, and moving-map displays which could

assist the pilot in avoiding hazardous conditions and enhance situational awareness. Accordingly, this proposal would facilitate the design and production of technologically advanced aircraft with instruments and equipment that could be used to support both safe and more cost-effective flight training.

The proposed requirement would also require that the equipment, instruments, and systems function properly under all operating conditions and that the failure or malfunction of a single equipment item or an instrument, or the failure of a system would not cause loss of aircraft control. Manufacturers could comply with this requirement by identifying critical single-point failure items or systems and build in redundancy to provide alternatives or back-up options. A specific example of how this requirement could be met would be the installation of a back-up attitude indicator, using a power source other than that used for the primary attitude indicator, in an aircraft that is authorized to fly in IMC. Attitude indicators are the primary instrument pilots use to maintain proper aircraft attitude and bank angles when ground references are no longer visible. A secondary attitude indicator would prevent a loss of control situation in the event the primary attitude indicator or its power system failed while the aircraft was flying in IMC or without visual reference to the ground.

The FAA anticipates that compliance with the proposed requirements would require analysis of the aircraft's instruments and equipment to consider each separately and in relation to each other as failures resulting from equipment incompatibility may result in an accident. Manufacturers could use various methods to comply with this requirement such as the installation of back-up systems or through testing techniques. The integrity of the aircraft design, equipment, and systems, and the quality of aircraft manufacturing processes is essential for safe flight.

## 8. Accessibility of Controls and Displays

Proposed § 22.140 would require that the aircraft be designed and constructed so that the pilot can reach all controls and displays in a manner that provides for smooth and positive operation of the aircraft.

This proposed performance requirement is necessary to enable ergonomic and human factors designs in light-sport category aircraft that result in these aircraft being simple to operate. A flightdeck or pilot station not designed to account for ergonomic and human factors may result in controls and displays located in locations that do not allow for their efficient and timely operation by the pilot. Aircraft designs that do not provide the pilot with the ability to effectively activate, operate, or otherwise interface with the aircraft's controls and display information could significantly affect the pilot's ability to safely operate the aircraft resulting in loss of control. The proposal would support ergonomic designs where the activation or operation of a control, switch, or display would not unduly distract a pilot from maintaining proper control of the aircraft. The FAA encourages aircraft designers to use the flexibility of this proposal to prioritize the placement of controls and displays based on their criticality to maintaining safe ground and flight operations.

Amateur-built aircraft issued experimental airworthiness certificates have no regulatory requirement to incorporate design and construction features where the pilot must reach all controls and displays in a manner that provides for smooth and positive operation of the aircraft. Type-certificated, normal category airplanes must comply with the airworthiness standards found in subpart G of part 23 that specify flightcrew interface requirements with installed instruments and equipment. Type-certificated, normal category rotorcraft must comply with part 27 airworthiness standards that require cockpit controls be located to provide convenient operation and to prevent confusion and inadvertent operation.

The level of rigor for the accessibility of controls and displays in light-sport category aircraft would not be as extensive as the § 25.777 cockpit control requirements for type-certificated aircraft. Although § 25.777 requires that each cockpit control be located to provide convenient operation and to prevent confusion and inadvertent operation, it contains further requirements for the turning direction and effectivity of controls, prevention of interference from structures and pilot clothing, specific locations for the controls of lifting devices (e.g., flaps) and landing gear, and shapes and color contrast of control knobs. The extent of requirements in § 25.777 far exceed the simpler requirement for light-sport category aircraft that its controls and displays be reached by the pilot without disrupting smooth and positive operation of the aircraft.

The proposal, consistent with the FAA's safety continuum, would establish requirements for the accessibility of controls and displays in light-sport category aircraft that are not necessary for amateur-built aircraft. Amateur-built aircraft have no regulatory requirements for the pilot to reach all controls and displays so builders can design their own instrument panel and locate controls and displays wherever they prefer. Because light-sport category aircraft have fewer operational restrictions and may conduct aerial work, the certification rigor for light-sport category aircraft would be greater. Accordingly, light-sport category aircraft would have to have controls and displays where the pilot can reach in a manner that provides for smooth and positive operation of the aircraft. This requirement would help prevent distractions and loss of control accidents. Manufacturers would be able to comply with these requirements through FAA-accepted consensus standards.

For light-sport category airplanes, powered parachutes, and lighter-than-air aircraft (balloons and airships) certificated under current rules, ASTM standards F2245, for light-sport airplanes, F2244, "Standard Specification for Design and Performance Requirements for Powered Parachute Aircraft," and F2355, "Standard Specification for

Design and Performance Requirements for Lighter-Than-Air Light Sport Aircraft,” state that for the pilot compartment, accessibility and the ability to reach all controls for smooth and positive operation shall be provided. For weight-shift-control aircraft and gliders, ASTM standards F2317/F2317M, “Standard Specification for Design of Weight-Shift-Control Aircraft,” and F2564, “Standard Specification for Design and Performance of a Light Sport Glider,” state that there must be a control or means accessible to the pilot while wearing a seat belt by which the pilot can effectively shut off the flow of fuel.

As the proposal would expand the scope of aircraft that may be certificated as light-sport category aircraft, revised consensus standards submitted to the FAA for acceptance would need to address the pilot’s ability to reach all controls and displays in a manner that provides for smooth and positive operation in a much wider range of aircraft. Activation or manipulation of aircraft controls and displays could not require a level of attention significant enough to cause the pilot to shift focus, create a distraction, or otherwise interfere with the operation of the aircraft. Such loss of attention or focus could result in an incident or accident.

To comply with the provisions of the proposed rule, a manufacturer would design and install controls and displays that would permit the pilot to readily monitor and perform defined tasks associated with the intended functions of systems and equipment. These provisions would reduce the potential for pilot error and minimize the risk of resulting hazards. Accordingly, the proposed requirement would serve to prevent inadvertent unusual attitudes and loss of control accidents due to poor ergonomics and cockpit design. The proposed requirement would also have the benefit of reducing pilot workload and fatigue since controls and displays would be reached in a manner that provides for smooth and positive operation of the aircraft. These design features would further the conduct of safe operations by minimizing pilot distraction when a control or display is operated.

## 9. Propulsion System

Proposed § 22.145 would establish requirements for light-sport category aircraft propulsion systems. Propulsion systems would be required to have controls that are intuitive, simple, and not confusing and be designed so that the failure of any product or article would not prevent continued safe flight and landing or, if continued safe flight and landing cannot be ensured, the hazard would be minimized. Additionally, propulsion systems would not be permitted to exceed safe operating limits under normal operating conditions and would be required to have the necessary reliability, durability, and endurance for safe flight without failure, malfunction, excessive wear, or other anomalies.

Under this proposed requirement, light-sport category aircraft would be equipped with propulsion systems that do not require excessive pilot skill or training to operate. The proposal would enhance safety in the event of any failure of the propulsion system such that safe control of the aircraft could be readily maintained by the pilot, aircraft automation, or their combined action. The ability to maintain safe control of the aircraft in the event of a partial or complete failure of the propulsion system would significantly assist in reducing the probability of an accident or loss of aircraft control.

The FAA considers that continued safe flight and landing means an aircraft is capable of continued controlled flight and landing, possibly using emergency procedures, without requiring exceptional pilot skill or strength. For aircraft designed with simplified flight controls, this may be accomplished through automation. Upon landing, some aircraft damage may occur because of a failure condition.

The proposed requirements, while intended to result in the airworthiness of light-sport category aircraft, have also been specifically designed to meet the level of rigor the agency considers appropriate for the certification of these aircraft in accordance with the FAA's safety continuum concept. When comparing the proposed requirements for the

certification of light-sport category aircraft to the certification requirements of amateur-built aircraft, the FAA notes that amateur-built aircraft have no regulatory requirements applicable to the design or functionality of their propulsion systems. Amateur builders may experiment with a wide range of propulsion system designs and may incorporate a variety of design features for the control, operation, reliability, durability, or endurance of their propulsion systems into their aircraft. Comparatively, light-sport category aircraft propulsion systems would be required to meet the § 22.145 requirements because they could conduct aerial work and have fewer operational restrictions than amateur-built aircraft. Therefore, light-sport category aircraft would require a higher level of certification rigor for the propulsion system. The requirements for the design of the propulsion system would allow for easy, reliable, and consistent operations. These qualities would allow for safe operations and minimize hazards associated with engine failures. Compliance to the requirements in § 22.145 would be with FAA-accepted consensus standards.

In contrast, type-certificated aircraft must comply with the airworthiness standards for propulsion system in parts 23, 25, 27, and 29. Type-certificated engines installed in these aircraft must comply with the airworthiness standards for engines found in part 33, and the fuel venting and exhaust emission requirements found in part 34, if applicable. If propellers are installed on type-certificated aircraft, then the airworthiness standards of part 35 must also be complied with. The level of rigor of the standards proposed for the propulsion systems of light-sport category aircraft would not be as extensive as that required for aircraft intended for type-certification yet would provide basic certification requirements currently inapplicable to amateur-built aircraft.

For light-sport category aircraft, specialized consensus standards for propellers and reciprocating spark and compression ignition engines exist in current FAA-accepted

ASTM consensus standards.<sup>29</sup> These standards address data, designs, testing and manufacturing of these products. ASTM Standard 2245 for light-sport category airplanes specifies that powerplant installations must be shown to have satisfactory endurance without failure, malfunction, excessive wear, or other anomalies.

Additionally, the FAA notes that ASTM Standard F2840, “Standard Practice for Design and Manufacture of Electric Propulsion Units for Light Sport Aircraft,” provides a basis for the development of electric propulsion units for electric-powered aircraft that currently cannot be certificated as light-sport category aircraft. While this proposal would allow for the use of electric propulsion in light-sport category aircraft, this standard would need to be evaluated and revised to account for electric propulsion units that could be installed on additional classes of aircraft and those aircraft with increased performance capabilities that would be permitted to be certificated under the proposal.

The proposed propulsion system requirements would permit aircraft designs to be certificated that enable the application of power to be accomplished through simple, intuitive, and non-confusing means. Moving a bi-directional lever forward to increase speed and backward to reduce speed in level flight, similar to the instinctive use of a legacy power control (throttle), is one way to achieve this. This control, as well as all other propulsion system controls, should be ergonomically located so that movement is achieved without considerable effort for the pilot throughout the aircraft’s flight envelope in all flight conditions. While the FAA encourages the automation of propulsion system controls, the continued use of non-confusing legacy propulsion system controls, such as the blue lever for propeller control and red lever for mixture control, would still meet the proposed requirements and assist in maintaining standardization throughout the light-sport category fleet.

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<sup>29</sup> ASTM standard F2339, “Practice for Design and Manufacture of Reciprocating Spark Ignition Engines for Light Sport Aircraft;” ASTM standard F2538, “Practice for Design and Manufacture of Reciprocating Compression Ignition Engines for Light Sport Aircraft;” ASTM standard F2840, “Practice for Design and Manufacture of Electric Propulsion Units for Light Sport Aircraft;” and ASTM standard F2506, “Specification for Design and Testing of Light Sport Aircraft Propellers.”



The proposal would also require that the propulsion system be designed so that the failure of any product or article does not prevent continued safe flight and landing or, if continued safe flight and landing cannot be ensured, the hazard has been minimized. The results of this proposed requirement would not permit a partial or complete loss of power to adversely affect the handling qualities of an aircraft. For single-engine aircraft, this requirement would ensure the aircraft is controllable after the loss of engine power so that an engine-out descent and landing could be readily accomplished. For multi-engine or multi-motor aircraft, the proposal would enable any power asymmetry to be compensated automatically by the aircraft or by the pilot with no resulting adverse effect on the aircraft's handling qualities. Power asymmetry on a multi-engine or multi-motor aircraft, if not handled properly, can result in loss of control. Propulsion system failures could be addressed by actions such as the aircraft establishing a controlled descent to a landing surface, diverting to an alternate location, or returning to the initial point of departure.

The FAA encourages a hazard assessment, similar to that required by § 23.2410 for the certification of normal category airplanes, be conducted. This assessment would address the likely failure of any product or article so that it would not prevent continued safe flight and landing or, if continued safe flight and landing cannot be ensured, the hazard has been minimized. For example, if manufacturers install propellers on twin engine airplanes that can be feathered in the event of an inflight engine shutdown, this would help to minimize the hazard of drag. In this instance, decreased drag would benefit aircraft performance by increasing range and decreasing flight asymmetry.

The proposal would require that the propulsion system be designed to preclude operation outside safe operating limits under normal operating conditions and that the system be consistently dependable for all intended operations. Accordingly, the propulsion system would be required to be designed with safety features to prevent the

occurrence of operations such as the operation of propellers or rotors outside design RPM limits.

The propulsion system would also be required to have the necessary reliability, durability, and endurance for safe flight without failure, malfunction, excessive wear, or other anomalies. Defects, such as cracks or leaks that could result in the loss or malfunction of an engine, propeller, or rotor system, would be mitigated under this proposal. These proposed requirements for durability and endurance address the safety of system designs and construction methods, as well as the use of materials suited for the operational life of the propulsion system. The proposal would permit light-sport category aircraft designs to address these requirements using conventional, simple propulsion system designs or advanced technologies.

#### 10. Fuel Systems

Proposed § 22.150 would establish requirements for aircraft fuel systems. Fuel systems would be required to provide a means to safely remove or isolate the fuel stored in the system from the aircraft and be designed to retain fuel under all likely operating conditions.

The FAA is proposing this performance requirement because aviation fuel removal or isolation is necessary in the event fuel contamination is known or suspected. Fuel would include both liquid aviation fuel (e.g., avgas) and electrical energy, whether stored in batteries, produced by electric motors, or produced by other power generation devices. Removal or isolation of aviation fuel under such circumstances would prevent damage to the aircraft's engine and fuel system components used to transport fuel from the aircraft's fuel storage tank or other storage means to the aircraft's propulsion system. The inability to isolate or remove contaminated aviation fuel from the aircraft's fuel system could lead to engine failure and an emergency landing. Additionally, the ability to

remove or drain aviation fuel from fuel tanks may be necessary for aircraft maintenance or repairs.

For aircraft with electrical energy stored in batteries or produced by electric motors or other power generation devices, having the ability to remove or isolate electrical current in an aircraft may help prevent damage to electrical components or systems in the event of an electrical malfunction. Electrical components must be able to be isolated or removed from the electrical system to prevent overheating and subsequent fire which could result in significant structural damage or loss of aircraft control.

In this proposal, fuel systems would be required to be designed and constructed to retain fuel under all likely operating conditions, such as during all authorized maneuvers, turbulence encounters, and aircraft accelerations and decelerations and an emergency descent and landing. The FAA considers that this requirement would be necessary for the safe and continuous operation of the aircraft's propulsion system. The proposed requirement for the aircraft to retain fuel under all likely operating conditions is necessary for a variety of purposes. For example, these purposes could include preventing fuel from being a source of ignition or feeding an existing fire, maintaining the aircraft's center of gravity within prescribed limits, providing structural support, preventing loss of aircraft range and endurance, preventing corrosion and equipment damage, and preventing toxic fumes from entering occupied compartments.

The proposed fuel retention requirement would also apply to the storage of electrical energy. Failure to secure or retain a battery or other electrical components powering the aircraft could result in emergency situations that could lead to structural damage or the loss of aircraft control. Examples include electrical or electrical-sourced fires, corrosion that results in structural damage, loss of essential electrical equipment such as avionics equipment providing altitude, heading, and attitude reference information, or toxic fumes entering occupied compartments.

The level of rigor of the proposed requirements for the removal, isolation, and retention of fuel for light-sport category aircraft would not be as extensive as that required for aircraft intended for type-certification. Type-certificated aircraft are required to comply with extensive airworthiness standards in parts 23, 25, 27, and 29 for the removal, isolation, and retention of fuel.

However, the FAA is proposing requirements for light-sport category aircraft that, in accordance with the safety continuum, would not be imposed on amateur-built aircraft. Amateur-built aircraft fuel system design is not regulated which allows amateur-builders to experiment with how they retain and distribute fuel from their fuel tanks to their engine, or for electric powered aircraft, from their electric power source to a motor. Amateur-builders may install fuel isolation and shut-off valves, filters, pumps, drains, and fuel lines as they deem necessary for the normal and emergency operation of their aircraft. However, because light-sport category aircraft operate with fewer restrictions than amateur-built aircraft, this rule would require light-sport category aircraft fuel systems to provide a means to safely remove or isolate the fuel stored in the system from the aircraft and be designed to retain fuel under all likely operating conditions. These requirements would provide for fuel removal or isolation of contaminated fuel, irregular electrical current, or malfunctioning equipment, which may enable continued operation of an engine or motor. Light-sport category aircraft fuel systems would also have to retain fuel throughout the system which would allow for the mitigation of hazards and safe operations. Compliance with the requirements in § 22.150 would be accomplished through FAA-accepted consensus standards.

For light-sport category aircraft, the current fuel removal, isolation, and retention provisions specified in the applicable consensus standards vary based on the class of aircraft. For instance, current FAA accepted consensus standards for light-sport category airplanes, gliders, and weight-shift-control aircraft, specify that these aircraft have at least

one drain or other available method to allow safe drainage of fuel from tanks.<sup>30</sup>

Consensus standards for all light-sport category aircraft except balloons and powered parachutes specify that the aircraft have a control to shut-off fuel as a means of isolation.<sup>31</sup> For light-sport category airplanes, gliders, and weight-shift-control aircraft, the standards specify that the battery installation must withstand all applicable inertia loads.<sup>32</sup> Consensus standards for light-sport category airplanes, gliders, powered parachutes, airships, and weight-shift control aircraft specify that their fuel tanks be able to withstand all applicable inertia loads or prescribed load factors.<sup>33</sup> The FAA anticipates that industry would develop acceptable and appropriate consensus standards for all classes of light-sport category aircraft to comply with the proposed requirement for the removal, isolation, and retention of fuel.

## 11. Fire Protection

Proposed § 22.155 would require that the hazards of fuel or electrical fires following a survivable emergency landing be minimized by incorporating design features to sustain static and dynamic deceleration loads without structural damage to fuel or electrical system components or their attachments that could leak fuel to an ignition source or allow electrical power to become an ignition source.

Fuel and electrical system components need to maintain their connectivity and structural integrity to prevent leakage, fumes, and electrical wiring from igniting a flammable source in the event of a survivable emergency landing. Proposed § 22.155 is necessary to minimize the risk of additional injuries due to fire and create sufficient time for aircraft occupants to safely escape an aircraft immediately after an accident or incident.

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<sup>30</sup> ASTM F2245, F2564, and F2317/F2317M.

<sup>31</sup> ASTM F2245, F2564, and F2317/F2317M.

<sup>32</sup> ASTM F2245, F2564, and F2317/F2317M.

<sup>33</sup> ASTM F2245, F2564, F2317/F2317M, F2244, and F2355.

Amateur-built aircraft issued experimental airworthiness certificates have no regulatory requirement to incorporate design features to sustain static and dynamic deceleration loads without structural damage to fuel or electrical system components or their attachments. The ability of an amateur-built aircraft to minimize the hazards of fuel or electrical fires is largely dependent upon the manufacturer's design, although amateur builders can assist by using recommended methods, techniques, and practices when installing fuel and electrical components and attachments. Light-sport category aircraft, however, may be more complex and could engage in work for compensation or hire; therefore, the FAA is proposing a heightened requirement that fire sources be minimized. Requiring fire sources be minimized following an impact is consistent with the location of light-sport category aircraft on the safety continuum. Therefore, this proposed rule would direct this through the requirements of § 22.155. Compliance with these requirements would be accomplished through FAA-accepted consensus standards.

Type-certificated aircraft have airworthiness standards in parts 23, 25, 27, 29, and 31 where fuel tanks, fuel lines, electrical wires, and electrical devices must be designed, constructed, and installed, as far as practicable, to be crash resistant. Type-certificated aircraft must retain fuel to minimize hazards to the occupants during any survivable emergency landing. There are multiple ways for manufacturers to minimize the ignition of fluids and vapors. Retention methods to minimize the probability of ignition of the fluids and vapors include, but are not limited to, stopping the flow of fluids, shutting down equipment, fireproof containment, or the use of extinguishing agents. Type-certificated aircraft also undergo drop testing to demonstrate their ability to withstand deceleration loads without structural damage to fuel system components or their attachments.

The FAA considers that drop testing and the more prescriptive elements of the fire safety rules applicable to type-certificated aircraft would not be preferable because of

the lower risk and certification rigor, and fewer operating privileges of light-sport category aircraft. Since light-sport category aircraft subject fewer people to risk per flight, and have fewer operating privileges when compared to part 23 airplanes, this rule would not impose the prescriptive elements of the fire safety rules for type-certificated aircraft subject to part 23, 25, 27, 29, or 31. Although the FAA does not consider it currently necessary to require light-sport category aircraft to undergo drop testing, these aircraft would likely undergo either drop testing or some alternate testing procedure to comply with the fire protection requirements in this proposed rule.

For light-sport category aircraft, the current fuel retention methods in the FAA-accepted consensus standards vary based on the class of aircraft. For instance, during emergency landing scenarios for light-sport category airplanes, powered parachutes, and gliders, the aircraft design must be strong enough to protect occupants from fuel concentrated above or behind their seating location.<sup>34</sup> Light-sport category airplanes and gliders may mitigate the risks of fires with the use of heat shielding, electrical isolation, or ventilation.<sup>35</sup> Likewise, light-sport category airplanes, gliders, and weight-shift-control aircraft designs protect fuel lines by using fire resistant lines or a fire-resistant covering on the lines.<sup>36</sup> For these three aircraft classes, battery installations must be able to withstand all applicable inertia loads. All light-sport category aircraft except balloons and powered parachutes have a control to shut-off fuel as a means of isolation under the current FAA-accepted consensus standards.<sup>37</sup> Finally, for light-sport category gliders, the FAA-accepted consensus standards specify that fuel leaking from any system lines or fittings must not either directly hit hot surfaces or equipment causing a fire risk, or directly contact occupants.<sup>38</sup>

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<sup>34</sup> ASTM F2245, F2564, and F2244.

<sup>35</sup> ASTM F2245 and F2564.

<sup>36</sup> ASTM F2245, F2564, and F2317/F2317M.

<sup>37</sup> ASTM F2245, F2564, F2317/F2317M, and F2355.

<sup>38</sup> ASTM F2564.

As a result of the expansion in the performance and capabilities of aircraft that would be certificated as light-sport category aircraft under the proposal, the FAA anticipates that industry would develop acceptable and appropriate consensus standards for all classes of light-sport category aircraft to comply with the proposed requirements of § 22.155. The design features must be capable of preventing the ignition of fuel or allowing electrical power to become an ignition source for a fire. The integrity of the fuel or electrical systems and their storage elements, to include structures, tanks, lines, pumps, valves, wirings, and electrical components must be accounted for in this proposed requirement. The design must be capable of stopping or isolating fuel, electrical power, and associated fumes to prevent ignition and spread of fire.

## 12. Visibility

Proposed § 22.160 would require that the aircraft be designed and constructed so that the pilot has sufficient visibility of controls, instruments, equipment, and placards. Additionally, the proposal would require that the aircraft provide the pilot with sufficient vision outside the aircraft necessary to conduct safe aircraft operations.

Poorly designed pilot compartments and aircraft designs that fail to optimize the pilot's ability to see controls, instruments, and equipment could lead to inadvertent unusual attitudes, stalls, or loss of control of the aircraft. Likewise, structures that block the pilot's ability to see their surroundings, both inside and outside the aircraft, can be a hazard for the pilot and other personnel on the ground and in the air. Pilots need to be able to visually clear areas around their aircraft during aircraft start-up and while conducting ground movements, just as they need to visually assess that the airspace in which they operate is clear of aircraft and other hazards when operating in visual meteorological conditions. Additionally, restrictions on the ability of pilots to see other controls, or on the ability of both the pilot and other occupants to see required aircraft placards, could affect the safety of the flight, as aircraft warnings and operational limits



might not be heeded and the pilot's ability to respond to adverse flight conditions could also be significantly impaired.

The proposed requirement for the pilot to have sufficient visibility of controls, instruments, equipment, and placards within the aircraft and of the aircraft's exterior environment would meet the level of rigor the FAA considers appropriate for light-sport category aircraft and its place on the safety continuum between amateur-built aircraft and normal category aircraft. For amateur-built aircraft, there are no specific regulatory requirements addressing visibility of controls, instruments, and equipment. As stated earlier, amateur builders may design their own instrument panels and locate controls, instruments, and equipment wherever they prefer. Because light-sport category aircraft could be used for aerial work, have fewer operational restrictions, and require a higher level of certification rigor, the FAA is proposing the requirements in § 22.160. These requirements would include interior and exterior visibility requirements to eliminate hazards that could lead to loss of control or loss of the aircraft due to collision with aircraft, wildlife, or structures in the air or on the ground. The requirement would also allow system warning and caution lights and annunciators to be easily seen by the pilot for a timely response to an abnormal indication or emergency. Manufacturers would comply with the § 22.160 requirements by using an FAA-accepted consensus standard.

However, normal category aircraft must comply with even more stringent airworthiness standards in part 23, 25, 27, or 29 for the pilot compartment view. In parts 25, 27, and 29, these standards require the pilot compartment view to provide a sufficiently extensive, clear, and undistorted view for safe operation that is free of glare and reflection that could interfere with the pilot's view. For airplanes certificated in accordance with part 23 requirements, the pilot compartment, its equipment, and its arrangement, to include pilot view, must allow the pilot to readily perform their duties and aircraft maneuvers.

Proposed § 22.160 imposes a more stringent requirement than the currently accepted consensus standards. Current consensus standards in ASTM Standard F2245 for light-sport airplanes, ASTM Standard F2244 for powered parachutes, and ASTM Standard F2355 for lighter-than-air light-sport aircraft state that the pilot compartment needs to provide appropriate visibility of instruments, placards, and the area outside the aircraft. The consensus standards in ASTM Standard F2564 for a light-sport glider state that the cockpit view must be designed so that the pilot's vision is sufficiently extensive, clear, and undistorted for safe operation and that rain shall not unduly impair the pilot's view. For weight-shift control aircraft, there are no consensus standards for the pilot compartment's internal and external views due to the open-air design of these aircraft. The FAA anticipates that industry would develop acceptable and appropriate consensus standards for applicable classes of light-sport category aircraft to comply with the proposed requirements of § 22.160.

The proposed rule would require the pilot to be able to easily see all aircraft controls and instruments necessary to safely operate the aircraft and its equipment and systems under all conditions and would be applicable to all aircraft that would be eligible for certification as light-sport category aircraft under the proposal. Pilots and other occupants of all classes of light-sport category aircraft must be able to readily see warning placards that would aid in identifying hazards, prevent damage to the aircraft, and provide other relevant safety critical information.

The aircraft must provide pilots with sufficient visibility to readily identify other aircraft or potential hazards such as structures and icing conditions and aid the pilot in complying with other regulatory requirements including § 91.113, "Right-of-way rules: Except water operations," and § 91.155, "Basic VFR weather minimums," while in flight. For example, aircraft that are not designed to enable the pilot to visually detect ice accumulations on the aircraft could result in a stall and loss of control. Improper

placement of structural supports could also result in an accident or incident if the pilot's visibility is blocked or impeded. A pilot should not have to make unnecessary or unusual head movements inflight to clear for traffic and other hazards as this could lead to spatial disorientation and unusual attitudes. Additionally, the pilot compartment must also provide the pilot with sufficient visibility to safely conduct ground operations by enabling the aircraft to remain clear of other aircraft, structures, vehicles, and ground personnel while simultaneously providing adequate visibility for the pilot to read applicable airfield signs and markings. Sufficient visibility is necessary to prevent situations such as runway incursions where an aircraft enters a runway without clearance or authorization.

Additionally, the design of the aircraft should provide the pilot with sufficient forward, aft, and side visibility to allow the pilot to avoid hazards both in the air and on the ground. The proposed requirements would enable the placement of items essential to safe aircraft operations to be visible to the pilot, provide for the avoidance of obstacles, and allow compliance with regulatory requirements while in flight and conducting ground operations.

### 13. Emergency Evacuation

Proposed § 22.165 would require that aircraft be designed and constructed so that all occupants can rapidly conduct an emergency evacuation. The aircraft's design would be required to account for all conditions likely to occur following an emergency landing, excluding ditching for aircraft not intended for operation on water.

The proposed requirement for emergency evacuation is necessary because aircraft designs that do not consider the ability of the pilot and passengers to rapidly evacuate the aircraft during an emergency can significantly increase the likelihood of serious risk of injuries or fatalities if exiting the aircraft is impeded by a poor design. The proposed requirement would reduce injuries and save lives by requiring aircraft design and construction to account for, and accordingly facilitate, rapid aircraft egress.

The proposed requirement for emergency evacuation would be appropriately scoped for the position of light-sport category aircraft on the FAA's safety continuum. For amateur-built aircraft, there are no specific regulatory requirements for emergency egress, whereas for type-certificated aircraft, parts 23, 25, 27, and 29 contain requirements for emergency evacuation. For example, for the type certification of normal category rotorcraft under part 27, there are requirements in §§ 27.805 and 27.807 for the location and size of emergency exits for the flight crew as well as provisions for the exits to be unobstructed when an emergency landing occurs on water. Requirements for the cabin emergency exits include items such as location, number available, type, operation, and marking.

For aircraft certificated as light-sport category aircraft, emergency evacuation standards are currently included in certain consensus standards and vary according to the design of the aircraft. For some classes of light-sport category aircraft, such as weight-shift control aircraft and powered parachutes, emergency evacuation standards do not exist since the pilot and passenger are not situated in a fully enclosed compartment. For light-sport airplanes, ASTM Standard F2245 contains a standard for emergency evacuation that states the pilot compartment shall provide the ability to conduct an emergency escape. For light-sport gliders, ASTM Standard F2564 provides standards for emergency exit that state the cockpit must be designed so that unimpeded and rapid escape in emergency situations is possible, and, on closed canopies, the opening system must be designed for simple and easy operation. The opening system must function rapidly and be designed so that it can be operated by each occupant strapped in his seat and from outside the cockpit.

Proposed § 22.165 could be complied with by having multiple escape exits (doors, windows, hatches) or easily accessible mechanisms both inside and outside the aircraft to open escape exits (which should be marked for easy identification and use in

compliance with proposed § 22.170). Multiple escape doors or hatches could also be used to enable egress in situations where the aircraft may not be upright. Aircraft intended for operation on water would be required to address emergency water landings. Although the FAA would encourage consensus standards to address ditching, the FAA would not require ditching to be addressed in the certification of light-sport category aircraft as imposing such a requirement would be a more extensive requirement than that currently imposed for smaller type-certificated aircraft. For example, § 23.2315 specifically excludes a consideration of ditching for level 1, level 2, and single engine level 3 airplanes.

The ability to rapidly conduct an emergency evacuation is directly related to the crashworthiness of an aircraft. Accordingly, the FAA is not proposing to directly link or limit crashworthiness and associated emergency evacuation requirements to aircraft stalling speed or another fixed airspeed. Instead, the proposal would permit applicants to take varied approaches to address aircraft crashworthiness. For example, the FAA encourages the incorporation of advanced technology, such as ballistic recovery systems, and innovations from other industries, such as the automotive industry, to provide increased airframe occupant protection.

The FAA encourages consensus standards bodies to strive for the highest level of occupant crash protection feasible. Comprehensive consensus standards could facilitate the evaluation of the entirety of a crashworthiness system, namely, the interaction of all crashworthiness features, rather than requiring an evaluation of discrete, individual parameters for occupant safety. An aircraft's ability to protect occupants and facilitate an emergency exit can be better understood by evaluating the aircraft as a complete system. The understanding gained from a systems evaluation can be used to develop and implement new technologies and methods to enable more rapid and safer aircraft emergency evacuations with fewer occupant injuries. Such an evaluation could include

analysis of important survivability factors identified by the NTSB, including occupant restraints, survivable volume, energy absorbing seats, and seat retention. Consideration given to these crashworthiness requirements may not necessarily prevent accidents, but should improve occupant safety, which would lead to decreased occupant injuries in the event of a crash and increase survivability of accidents.

The FAA is proposing few specific crashworthiness requirements within part 22. The proposed performance requirement for emergency evacuation and other proposed airworthiness requirements would allow for the use of many varied technologies and methods for occupant safety in the event of an emergency landing or other situations where rapid aircraft egress is required. The proposed requirement would promote innovation and encourage the introduction of new occupant protection technologies such as those that have been introduced by the automotive industry. The FAA encourages consensus standards bodies to develop consensus standards that will promote the introduction and rapid integration of these and other solutions into light-sport category aircraft designs.

#### 14. Placards and Markings

Proposed § 22.170 would require that the aircraft display all placards and instrument markings necessary for safe operation and occupant warning. Markings or graphics would be required to clearly indicate the function of each control, other than primary flight controls.

Placards provide warnings and identify hazards to crewmembers, occupants, aircraft maintenance and servicing personnel, and first responders. Instrument markings provide safe operating parameters for aircraft equipment and systems. Moreover, compliance with placards and markings is currently required by § 91.9. Not conducting aircraft operations in accordance with installed placards and markings could lead to

equipment or system failures that could negatively impact other systems, leading to an emergency that could put both the aircraft and occupants at significant risk.

The FAA contends that the proposed requirement for aircraft certificated as light-sport category aircraft to display all placards and instrument markings necessary for safe operation and occupant warning would establish a clear performance-based requirement that is in accord with the position of these aircraft within the FAA's safety continuum. For most experimental aircraft, there are no specific regulatory requirements for placards and instrument markings. However, some have operating limitations requiring display of placards. Type-certificated aircraft, which occupy the opposite end of the FAA's safety continuum, are subject to a variety of detailed placard and instrument marking requirements that are contained in the airworthiness standards found in parts 23, 25, 27, 29, and 31. Placards provide information for the safe operation of the aircraft while instrument markings indicate operating parameters as determined by the airworthiness standards.

For aircraft currently certificated as light-sport category aircraft, placarding and instrument markings are addressed in FAA-accepted consensus standards for each class of aircraft. Because of the various classes of light-sport category aircraft, the placarding and instrument marking consensus standards vary according to the complexity of the aircraft. Some of those standards apply generally, while others address specific situations that may apply only to more complex aircraft, such as placards for unusual design, operating, or handling characteristics, authorized operations, and passenger warnings. ASTM Standard F2245 contains standards for instrument markings on the aircraft's airspeed indicator.

The proposed placarding and instrument marking requirement would be applicable to all classes of aircraft that could be certificated as light-sport category aircraft under this proposal. Proposed § 22.170 is necessary so that the pilot and other

aircraft occupants can clearly see any placards or instrument markings that provide necessary warnings for their safety or for the safe operation of equipment or systems. Markings or graphics provide a clear indication of the function of the marked control to the pilot and aircraft occupants. The FAA notes that primary flight controls would not be required to be specifically marked, as their function should be intuitive to operation of the aircraft and readily ascertainable by the pilot.

Markings and graphics indicating the function of each control prevent confusion and inadvertent operation of equipment and systems by the pilot or other occupants. Improper or confusing placards, often due to poor wording, poor contrast, or poor location, can also prevent the timely actuation of systems or equipment necessary for safe flight or emergency evacuation, while inadvertent operation of equipment and systems can result in an unsafe aircraft attitude or flight condition leading to an emergency.

Accordingly, the proposed marking and placarding requirement is designed to provide appropriate warnings to help prevent errors that could lead to a loss of control or a serious accident or injury. The proposal would ensure that these potentially hazardous situations are properly accounted for and addressed. The FAA also notes that, for aircraft with simplified flight controls, an FAA-accepted consensus standard would be required to address the placarding of an aircraft certificated in the light-sport category with simplified flight controls as proposed in § 22.180.

#### 15. Noise

Proposed § 22.175 would require that aircraft meet the applicable noise standards of part 36 of this chapter. The proposed noise requirements are discussed in section IV.K.

#### 16. Aircraft Having Simplified Flight Controls

Proposed § 22.180 would permit an aircraft that meets certain criteria to be designated by the manufacturer as having simplified flight controls. For an aircraft to be designated as having simplified flight controls, it would be required to meet three criteria.



First, the pilot could only control the flight path of the aircraft or intervene in its operation without direct manipulation of individual aircraft control surfaces or adjustment of the available power. Second, the aircraft would be required to be designed to prevent loss of control, regardless of pilot input. Finally, the aircraft would need to have a means to enable the pilot to discontinue the flight quickly and safely. This feature would also have to be designed to prevent inadvertent activation.

Proposed § 22.180 for aircraft designed with simplified flight controls would only apply to those aircraft specifically designated by the manufacturer in its statement of compliance as having simplified flight controls.

The FAA recognizes that rapid advances are occurring in aircraft automation and flight control technology. Aircraft are being designed and constructed with pilot interfaces and flight controls that no longer resemble those found in traditional aircraft cockpits. These aircraft have highly automated systems for controlling the flight path, speed, and configuration of the aircraft while simultaneously providing protection from aerodynamic hazards such as asymmetric thrust and excessive structural loading. These aircraft also have cockpits or pilot compartments where primary flight controls such as sticks, control columns, throttles, and rudder pedals may have been replaced by simpler non-traditional methods of aircraft control such as touchscreens, switches, or other displays with push-button controls. A joystick controller that directly manipulates individual aircraft control surfaces would not qualify an aircraft as being designed with simplified flight controls. However, a joystick controller that is used to select flight commands or move a cursor on a display would be appropriate for a simplified flight control design.

Proposed § 22.180 would facilitate the development of these highly automated aircraft by providing a certification path that would enable light-sport category aircraft to be specifically designated as having simplified flight controls. As discussed later in this

proposal for § 61.31, these aircraft would be permitted to be operated by certificated pilots who may not have received the flight training or possess the aeronautical experience necessary to operate more traditional forms of aircraft, but nonetheless meet the specific requirements proposed for the operation of these highly automated aircraft.

For aircraft having simplified flight controls, the aircraft design would be required to inherently prevent loss of control regardless of pilot input. The FAA considers that a design inherently prevents loss of control if the design includes built-in features such as automation which prevent the pilot from inputting a flight command that would be hazardous to the aircraft or its occupants. Additionally, the aircraft design would need to include features so that the aircraft could only be operated within its designated flight envelope and within its prescribed operational limitations. These parameters would be preprogrammed and would include boundaries such as airspeed, altitude, vertical speeds, and lateral displacements. For aircraft equipped with multiple engines or rotor systems, the aircraft would need to be able to safely respond, using the aircraft's automation, to asymmetric power situations due to loss of engine power. If used in the design, automation would have to prevent loss of control of the aircraft under all circumstances, even to the point of overriding erroneous or hazardous pilot inputs or only permitting the input of certain commands in specific flight conditions.

The aircraft design would, however, be required to include a means to permit the pilot to discontinue or suspend the flight quickly and safely and prevent inadvertent activation of this feature. A pilot could choose to discontinue or suspend a flight for a variety of reasons such as unexpected weather conditions, physiological needs, a system malfunction, or the presence of other hazards such as a flock of birds or an aircraft near, or intersecting, the route of flight. Discontinuing or suspending a flight could include options such as an immediate landing, a return flight to the aircraft's point of departure, a diversion to an alternate landing site, a course change, or initiation of a low altitude orbit

or in-place hover until any hazards have passed. The aircraft design must include a means to prevent inadvertent or accidental activation of the control mechanism for the discontinuance or suspension of flight. This would prevent the aircraft from entering an unplanned or hazardous flight trajectory.

### 17. Quality Assurance System

Proposed § 22.185 would require aircraft to have been designed, produced, and tested under a documented quality assurance system to ensure each product and article conforms to its design and is in a condition for safe operation.

The 2004 final rule specifically recognized the necessity for aircraft certificated as light-sport category aircraft to be manufactured in accordance with a quality assurance system. The current definition of consensus standards in § 1.1 states that consensus standards used for the certification of light-sport aircraft may include “manufacturer quality assurance systems.” Proposed § 22.185 would establish a clear regulatory requirement so that the aircraft is manufactured in accordance with documented processes and manufactured under a documented quality assurance system.

Establishing and documenting a quality assurance system is critical to assuring that aircraft and aircraft kits meet applicable design, production, and airworthiness requirements and are manufactured and tested in accordance with identified consensus standards. Meeting the proposed quality assurance requirements using applicable FAA-accepted consensus standards would reduce the use of obsolete design drawings or procedures, improper materials or manufacturing techniques, and inadequate testing procedures that could jeopardize the safe operation of an aircraft. A quality assurance system would allow manufacturer or third-party auditors to verify that a manufacturer is producing aircraft in accordance with its established procedures and is continuing to produce safe aircraft.

Under the safety continuum, primary category kit-built aircraft intended for certification as experimental aircraft are the only experimental aircraft that have a regulatory requirement to be produced under a quality assurance system. Those aircraft are based on type-certificated designs and are required by § 21.191(h) to be manufactured by the holder of a production certificate for that kit. Production certificate holders must establish and maintain a quality assurance system as specified in § 21.137.

Persons currently seeking certification of experimental aircraft built from kits that were designed in accordance with the requirements applicable to aircraft certificated as light-sport category aircraft must be able to provide the information required by § 21.193(e). These aircraft are certificated under the provisions of § 21.191(i)(2) and the information provided will reference consensus standards addressing the manufacturer's quality assurance system. Additionally, aircraft built from those kits must have been assembled in accordance with manufacturer's assembly instructions that meet an applicable consensus standard. These aircraft are built under a quality assurance system as specified in ASTM Standard F2972, "Standard Specification for Light Sport Aircraft Manufacturer's Quality Assurance System."

A manufacturer of a type-certificated aircraft must establish and describe in writing a quality system that includes the 15 elements specified in § 21.137, obtain FAA approval of its quality manual under § 21.138, and show compliance with quality system requirements to the satisfaction of the FAA as part of applying for and obtaining a production certificate. For light-sport category aircraft, ASTM Standard F2972 currently addresses quality assurance systems for light-sport category aircraft. The FAA anticipates that industry would develop acceptable and appropriate consensus standards for light-sport category aircraft to comply with the proposed requirement in § 22.185

The FAA would rely on a manufacturer's statement of compliance as evidence of compliance to the requirements of § 22.185 for a production quality assurance system. The FAA retains its ability to inspect the manufacturer's facility and quality system.

#### 18. Finding of Compliance by Trained Compliance Staff

Proposed § 22.190 would require the aircraft to have been found compliant with the provisions of the applicable consensus standards by individuals who have been trained on determining compliance with those consensus standards.

Determining compliance with consensus standards is essential in enabling the airworthiness of an aircraft intended for certification as light-sport category aircraft. Accordingly, the FAA considers inclusion of a requirement that the aircraft be found compliant by individuals who have been appropriately trained in making those determinations to be of critical importance.

The FAA notes that experimental aircraft are generally not required to meet specific design or production requirements. Accordingly, there is no current requirement for the training of individuals who assess the suitability of the design or production of those aircraft for their intended operations.

Manufacturers of aircraft produced in accordance with the airworthiness standards set forth in part 23, 25, 27, 29, or 31, however, are required to show compliance with each requirement following a highly detailed and comprehensive certification plan. Assurance of compliance is attained via extensive FAA engagement with the manufacturer in which the manufacturer shows, and the FAA finds, compliance with applicable airworthiness standards. A type certificate is not issued for an aircraft design until the FAA finds compliance with all applicable airworthiness standards through a rigorous type-certification process involving extensive FAA involvement and oversight. Serial production of these aircraft is accomplished in accordance with the requirements

for production certificate holders specified in subpart G of part 21. That subpart includes specific requirements for the certificate holder's organization and quality system.

Given the FAA's reliance on the manufacturer's statement of compliance as the primary evidence of compliance with applicable requirements, the FAA considers it critical that individuals making these compliance findings would be trained in finding compliance to the broad array of applicable FAA-accepted consensus standards. This would require, for example, engineers, pilots, and maintenance experts who make compliance findings for manufacturers to receive training on the specific provisions of the applicable consensus standards and training on determining compliance to those standards.

The proposed requirement would implement a recommendation from the previously mentioned LSAMA Final Report. The LSAMA Final Report noted that a significant number of aircraft manufacturers could not fully demonstrate their ability to meet certain consensus standards. As a result, the report recommended that industry develop training so that manufacturers fully understand FAA regulatory requirements and policies applicable to the certification of light-sport category aircraft and the means necessary to meet applicable requirements. In view of the criticality of this need and the FAA's significant reliance on the manufacturer's statement of compliance, the FAA is proposing this requirement so that all individuals with responsibility for making compliance findings are trained to understand how to make complete and correct findings of compliance.

#### 19. Ground and Flight Testing

Proposed § 22.195 would require that an aircraft intended for certification as a light-sport category aircraft has been ground and flight tested under documented production acceptance test procedures. This testing would be required to validate aircraft performance data; ensure the aircraft has no hazardous operating characteristics or design

features; ensure the aircraft is in a condition for safe operation; and ensure the aircraft can safely conduct any aerial work operation designated by the manufacturer. The manufacturer will ensure each aircraft can safely conduct any aerial work operation by conducting flight testing of the that aerial work operation. If successful, the manufacturer would be able to provide a statement of compliance to the FAA-accepted consensus standards that would be the means of compliance for this proposed requirement.

Ground and flight testing of an aircraft is critical when establishing airworthiness. Accordingly, the FAA considers inclusion of a ground and flight-testing requirement especially important for the certification of light-sport category aircraft.

Aircraft with certain experimental airworthiness certificates, such as those issued for air racing, operating amateur-built aircraft, operating primary kit-built aircraft, and operating light-sport aircraft have flight testing requirements imposed by their operating limitations, yet no specific ground testing requirements. For these experimental aircraft, the flight testing is typically conducted for a set time (e.g., 40 hours) to show compliance with § 91.319(b). The FAA notes that amateur-built aircraft may instead use an FAA-sourced task-based flight test plan as a substitute for the flight hour requirement. Aircraft issued experimental airworthiness certificates for the purpose of research and development or showing compliance with regulations must also undergo flight testing to determine the suitability of the design for the issuance of a design or airworthiness approval, as applicable.

All aircraft manufactured in accordance with the airworthiness standards set forth in part 23, 25, 27, 29, or 31 are subject to ground and flight-testing requirements as part of the type-certification process. The flight testing of aircraft intended for type certification is much more rigorous than that of other aircraft, as the flight testing is conducted for the aircraft to show compliance to the airworthiness standards used in the development of the aircraft's design. Regulatory flight-testing requirements for type-

certificated aircraft are specified in § 21.35. A highly detailed and comprehensive test plan is used to conduct ground and flight testing in the development of a type-certificated aircraft.

The level of rigor for the ground and flight testing of light-sport category aircraft would not be as extensive as that required for aircraft intended for type certification, yet more extensive than that specified for experimental aircraft. Ground and flight testing of light-sport category aircraft would not require that the aircraft only be flown for a specified number of hours, as is done for certain experimental aircraft. It would also not require the flight testing necessary to achieve a showing of compliance with extensive airworthiness requirements, as is required for aircraft being flown as part of a type-certification program. It would, however, require an evaluation of the aircraft to ensure that it meets the requirements specified in § 22.195.

Current flight and ground testing of light-sport category aircraft centers on verifying that the initial production aircraft meets certain operational performance requirements that have been specified by the manufacturer in the pilot's operating handbook (POH). ASTM Standard F3035, "Standard Practice for Production Acceptance in the Manufacture of a Fixed Wing Light Sport Aircraft," contains standards for ground and flight testing fixed-wing aircraft. ASTM standard F3035 addresses several requirements in proposed § 22.195 such as validating aircraft performance data, ensuring the aircraft has no hazardous operating characteristics, and ensuring the aircraft is in a condition for safe operation. The FAA notes that FAA-accepted production acceptance testing consensus standards exist for all classes of light-sport category aircraft.<sup>39</sup> Since this proposal would expand the classes of aircraft that could be certificated as light-sport category aircraft and include a provision to allow aerial work as designated by the

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<sup>39</sup> ASTM F2356, Standard Specification for Production Acceptance Testing System for Lighter-Than-Air Light Sport Aircraft; ASTM F2242, Standard Specification for Production Acceptance Testing System for Powered Parachute Aircraft; and ASTM F2447, Standard Practice for Production Acceptance Test Procedures for Weight-Shift-Control Aircraft.



manufacturer, the FAA anticipates that industry would develop acceptable and appropriate consensus standards to comply with the performance-based requirements in § 22.195.

Manufacturer ground and flight testing of each aircraft intended for certification as light-sport category aircraft would be necessary to verify the aircraft meet the proposed regulatory requirements. Such testing would validate expected aircraft performance data (e.g., airspeeds, fuel flow, fuel burn rate, range, endurance, load factors (g-limits), engine-out (if applicable), etc.) and validate that the design and material used in the construction of the aircraft provides sufficient strength and durability for the conduct of all authorized operations. Ground and flight testing using production acceptance test procedures also would verify that each aircraft does not have any unforeseen hazardous flight characteristics and that the aircraft was properly constructed. This testing ensures that the aircraft's structure is of sufficient strength for its intended operations and that aircraft controls are not binding, rubbing, or showing unexpected wear. Aircraft designed with simplified flight controls must be ground and flight tested to validate compliance with the requirements of § 22.180. Aircraft that have not undergone adequate environmental testing in a ground and flight test program may experience unpredicted behaviors or malfunctions caused by environmental factors, which may lead to an aircraft accident or incident. Production acceptance test procedures allows a buyer to receive a complete aircraft that conforms to the manufacturer's design data and provides the manufacturer with an opportunity to detect and fix any missing, broken, misaligned, or improperly installed components or systems.

The FAA also notes that if the aircraft has been authorized for the performance of specific aerial work operations by the manufacturer, production acceptance test procedures would verify that the aircraft has been designed and constructed to validate that the aircraft can be used to safely conduct those designated aerial work operations.

Ground and flight testing of the aircraft would be required to ensure that those aerial work operations could be safely conducted. The FAA notes that if the manufacturer's statement of compliance indicated that an aircraft was authorized to conduct aerial work that included patrolling operations, for example, the aircraft could be used for the patrolling of any structure or area such as pipelines, transmission lines, harbors, railroad tracks, farmland, forests, etc. Specific testing of the aircraft's ability to safely patrol these structures or areas would accordingly be required. As some patrolling using visual observation occurs at low altitudes, a manufacturer would be required to conduct patrolling flight testing at low altitude to verify the aircraft can safely conduct that aerial work operation. The FAA anticipates that industry will develop appropriate consensus standards to document specific ground and flight testing used to validate aerial work operations in the manufacturer's quality assurance records for each aircraft.

The FAA notes that some aerial work operations may place additional stresses and loads on an aircraft if operated outside normal flight profiles. Flight testing would validate any specific limitations necessary to conduct those designated aerial work operations. Additionally, it would confirm that other applicable requirements can still be met during the conduct of those operations, such as validating that the pilot has proper visibility from the flight compartment. The proposed requirement would validate that the aircraft has been demonstrated to be capable of safely performing those aerial work operations specifically designated in the manufacturer's statement of compliance.

#### 20. Revision of Documentation Submission Requirements for the Issuance of Special Airworthiness Certificates in the Light-Sport Category

Proposed § 21.190(c) would revise the list of documents that an applicant would be required to provide to the FAA at the time of application for an airworthiness certificate for a light-sport category aircraft. In addition to the currently required manufacturer's statement of compliance, the proposal would require submission of a

pilot's operating handbook, currently referred to as the aircraft's operating instructions. The proposed rule would require that additional information be contained in that document. The pilot's operating handbook would be required to include recommended operating instructions and limitations, a flight training supplement, a listing of any authorized aerial work operations, and a statement regarding compliance with part 36 requirements. Additionally, the current requirement that an applicant submit maintenance and inspection procedures would be revised to require the submission of a maintenance and inspection program. Similar to the existing airworthiness certification processes for light-sport category aircraft, the FAA would not approve or accept any of the documents submitted. The approach is aligned with the FAA's safety continuum where aircraft higher on the safety continuum have greater privileges but also go through more rigorous certification processes and have greater FAA oversight.

The proposal would provide applicants with clarification regarding the contents of the pilot's operating handbook by specifying that it include operating instructions and limitations to safely accommodate all environmental conditions and abnormal procedures likely to be encountered during the aircraft's intended operations. The operating instructions should address normal, abnormal, and emergency operating procedures as well as operations under all foreseeable environmental conditions. Examples of material that should be included in these instructions and limitations include guidance for operations in, or the avoidance of, certain weather phenomenon such as freezing precipitation, moderate or severe turbulence, takeoff or landing crosswinds, and hot and cold weather conditions.

By specifying in the proposal that the flight training supplement enable safe operation of the aircraft within the intended flight envelope under all foreseeable conditions, the FAA would codify its expectation that the flight training supplement provide enhanced guidance to pilots regarding those methods and procedures necessary

to safely operate the aircraft within its intended flight envelope under all foreseeable conditions. The flight training supplement should also provide aircraft operators with appropriate information to understand the operation of the aircraft and its systems.

Additionally, the pilot's operating handbook would be required to contain a listing of any aerial work operations for which the manufacturer designated the aircraft as capable of performing. This requirement would enable information regarding those designated aerial work operations to be readily available to the pilot. In accordance with the proposal, the manufacturer would be required to provide any aircraft instructions and limitations that effect the safe conduct of any manufacturer-designated aerial work operations. Instructions and limitations that apply to all operations would not need to be repeated for aerial work operations.

The pilot's operating handbook would also be required to include a statement that the aircraft has demonstrated compliance with part 36 to include the tested noise levels and a statement regarding the acceptability of those noise levels for aircraft operations. Per proposed per § 21.190(c)(2)(iv), the statement would assert that, "No determination has been made by the Federal Aviation Administration that the noise levels of this aircraft are or should be acceptable or unacceptable for operation in any location." This statement would provide operators with awareness that they are solely responsible for compliance with any operational noise abatement procedures and requirements for the locations where the aircraft is operated. An explanation of noise testing requirements and their applicability to aircraft certificated as light-sport category aircraft is contained section IV.K.

Currently, an applicant must provide the FAA with the aircraft's maintenance and inspection procedures as part of the process for an airworthiness certificate for a light-sport category aircraft. This proposal would require the applicant to instead provide a maintenance and inspection program. Maintenance and inspection procedures detail the

steps involved in performing a maintenance task, such as changing a tire, or performing an inspection, such as an annual inspection. A maintenance and inspection program is more comprehensive. It contains maintenance tasks as well as instructions and procedures for the conduct of inspections, tests, and checks that includes the airframe, engine, propeller, rotor, and appliances. It also includes a schedule for performing the inspections that must be accomplished under the inspection program expressed in time in service, calendar time, number of system operations, or any combination thereof, as well as qualifications of the person responsible for the inspections.

Proposed § 21.190(c)(4) would require an applicant for a special airworthiness certificate under this section to provide the FAA with evidence that its aircraft has demonstrated compliance with the applicable requirements of part 36. Such evidence may include a statement from the manufacturer concerning compliance with part 36, the means of compliance used, and the resultant noise levels. Section IV.K provides a detailed discussion of proposed noise requirements for aircraft that do not conform to a type certificate.

a. Enhancements to the Manufacturer's Statement of Compliance

Proposed § 21.190(d) would revise the contents of the manufacturer's statement of compliance required to be submitted by an applicant for the issuance of an airworthiness certificate under this section. In addition to the requirements currently specified in § 21.190(c), the manufacturer's statement of compliance would be required to include additional declarations by the aircraft's manufacturer which would be used to better assist the FAA in determining the airworthiness of the aircraft.

The FAA considers the manufacturer's statement of compliance to be a critical element in the certification of light-sport category aircraft as it provides a definitive statement by the aircraft's manufacturer that an aircraft complies with the applicable performance-based regulatory standards using applicable consensus standards as a means

of compliance. It also would provide assurance that the manufacturer would undertake certain specific actions to support the continuing airworthiness of the aircraft.

Because of the significant expansion in the types and performance of aircraft that would be permitted to be certificated as light-sport category aircraft, the FAA contends that the manufacturer's statement of compliance would take on an even greater level of importance in supporting the certification of light-sport category aircraft. Accordingly, the proposal would make significant enhancements to the statement of compliance to further strengthen its effect by requiring the manufacturer to provide greater detail regarding the aircraft and the processes and procedures used in its design and production. Those proposed changes are discussed in the paragraphs that follow. The proposed enhancements to the manufacturer's statement of compliance would serve to improve the validity and reliability of the statement. The proposed requirements would serve to further implement the recommendations made in the previously discussed LSAMA Final Report.

The FAA notes that light-sport category aircraft are not produced pursuant to an FAA type or production certificate. The information and data typically provided for type-certificated aircraft is not provided to the FAA during the certification process for light-sport category aircraft. Accordingly, the manufacturer's statement of compliance and inspection of the aircraft assist the FAA in assessing compliance to applicable performance requirements and determining airworthiness of the aircraft.

The proposed requirements of § 21.191(d)(1) for training of individuals with responsibility for making compliance statements would adopt a recommendation from the LSAMA Final Report. The LSAMA Final Report noted that the statement of compliance for certain aircraft may have been made that did not meet applicable consensus standards. As a result, the report recommended that industry develop training to enable manufacturers to fully understand FAA regulatory requirements and policies applicable

to the certification of light-sport category aircraft and the means necessary to meet applicable requirements. In view of the criticality of this need and the FAA's primary reliance on the manufacturer's statement of compliance (SOC), the FAA is proposing this requirement to help assure that all individuals with responsibility for making compliance statements are trained and certified to understand how to make complete and correct statements.

Proposed § 21.190(d)(3) would require a statement as to whether the aircraft meets the design and performance requirements specified in proposed § 61.316 for the aircraft that a sport pilot would be permitted to operate. This proposal would significantly expand the types of aircraft that could be certificated as light-sport category aircraft beyond those aircraft that a sport pilot would be permitted to operate under proposed § 61.316. Accordingly, the proposed requirement would provide persons exercising sport pilot privileges with a readily available means to determine whether a particular aircraft certificated as light-sport category aircraft qualifies for operation by a sport pilot.

Additionally, since the proposal would permit the manufacturer to designate those types of aerial work that may be conducted using the aircraft, the statement of compliance would be required by proposed § 21.190(d)(4) to specify any aerial work operations which the manufacturer has designated as being able to be safely conducted using the aircraft. Inclusion of this information in the statement of compliance provides the owner with a readily available source to determine which aerial work operations are authorized to be conducted in the aircraft. The list of aerial work operations that may be safely conducted using the aircraft should match those listed in the POH. Proposed § 21.190(d)(4) would also assist in validating that the appropriate ground and flight testing of the aircraft has been conducted in accordance with proposed § 22.195(d) to determine that the aircraft can safely conduct those authorized aerial work operations in accordance with the instructions and limitations provided.

Proposed § 21.190(d)(5) would require the statement of compliance to indicate whether the aircraft meets the requirements for aircraft having simplified flight controls (see preamble for proposed § 22.180). This proposal would permit manufacturers to designate aircraft certificated as light-sport category aircraft as having simplified flight controls if the applicable requirements are met. The proposed requirement would provide pilots with a readily available means to determine whether a particular aircraft can be operated by a pilot authorized to exercise privileges in an aircraft having such controls.

Proposed § 21.190(d)(6) would retain the current requirement that the statement of compliance specify the consensus standards used by the manufacturer; however, it would include a reference to proposed subpart B of part 22, which would contain the applicable design, production, and airworthiness requirements for which the consensus standards would serve as a means of compliance.

A manufacturer would need to identify each consensus standard used for the certification of the aircraft on FAA Form 8130-15, Light-Sport Aircraft Statement of Compliance. The FAA notes that consensus standards organizations typically publish a first issue or specific revision to a consensus standard before acceptance by the FAA. A consensus standard must be accepted by the FAA before it may be used for the certification of a light-sport category aircraft. Additionally, only those FAA-accepted consensus standards effective on the aircraft's date of manufacture are acceptable for use in its original airworthiness certification.

Current § 21.190(c)(4) requires the manufacturer to make available to any interested person the following documents that meet the identified consensus standard: the aircraft's operating instructions, the aircraft's maintenance and inspection procedures, and the aircraft's flight training supplement. Proposed § 21.190(d)(8) would require that the statement of compliance include a statement that the manufacturer will make available to any interested person the documents specified in § 21.190(c) which consist of



those documents required to be provided to the FAA for certification of the aircraft. In addition to the currently required documents, this proposal would require the manufacturers statement of compliance, a listing of any aerial work operations, and a statement that the aircraft has demonstrated compliance with noise requirements in part 36.

By proposing to revise the scope of documents that would be provided to the FAA, the proposal would also make a wider range of documents available to interested persons. The FAA contends that broadening the scope of information required to be made available would better assist current and prospective owners, operators, and maintenance personnel in safely operating and maintaining the aircraft. Additionally, it would be particularly beneficial to prospective purchasers of these aircraft by enhancing their understanding of the aircraft's operation, limitations, and maintenance and inspection procedures before purchase.

Proposed § 21.190(d)(10) would revise the requirements found in current § 21.190(c)(5), which requires a statement that the manufacturer will monitor and correct safety-of-flight issues through the issuance of safety directives and a continued airworthiness system that meets the identified consensus standard. The proposed § 21.190(d)(9) would specifically require the statement of compliance to include a statement that the manufacturer will support the aircraft by implementing and maintaining a documented continued operational safety program that monitors and resolves in-service safety of flight issues, includes provisions for the issuance of safety directives, and includes a process for notifying the FAA and all owners before discontinuance of its continued operational safety program or any transfer to another responsible party for that continued operational safety program.

The FAA considers the implementation of strong continued operational safety programs by aircraft manufacturers essential to maintaining the safety of light-sport

category aircraft. The proposed revisions to the statement of compliance per proposed § 21.190(d)(9) would serve to demonstrate the commitment of manufacturers to establish and maintain a comprehensive continued operational safety programs for their products. Well-documented continued operational safety programs would permit manufacturers to effectively monitor and resolve in-service safety of flight issues. When such issues arise, manufacturers may take appropriate action to resolve those issues. Such action could include, but not be limited to, the issuance of safety directives to address unsafe conditions for their products. As discussed later in this preamble, the FAA anticipates that manufacturers would still issue safety directives when necessary to resolve a safety of flight condition per § 21.190(d)(9).<sup>40</sup>

Proposed § 21.190(d)(9)(iii) would require a manufacturer to promptly notify owners of aircraft it manufactured of any safety issues so that safety-critical information can be rapidly disseminated. The proposal would require the statement of compliance to include a statement from the manufacturer that its continued operational safety program would include a process for notifying the FAA and all owners of all safety of flight issues associated with the aircraft. Notification to both the FAA and owners would increase awareness of potential safety issues and better enable the FAA to carry out its oversight responsibilities, including the issuance of airworthiness directives, of this emerging segment of the aviation industry. The proposal would facilitate increased communication of safety of flight issues to the community, and better enable subsequent owners and operators to become aware of, and take appropriate corrective actions to address, safety of flight issues.

Similarly, this proposal would require a manufacturer to provide notice, in advance, to the FAA and all aircraft owners of continued operational safety program

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<sup>40</sup> ASTM F3198, "Standard Specification for Light Sport Aircraft Manufacturer's Continued Operational Safety (COS) Program," directs the aircraft manufacturer to issue safety directives to correct safety of flight conditions.

service provider changes or discontinuance. Such changes could result from a merger, purchase, an agreement to allow a third-party to manage the program, or the discontinuance of manufacturing operations. Advanced notification of these changes would provide notice to the FAA and to the owners and operators of affected models. In the event of program cessation, this advanced notification would alert the FAA to the increased chance for potential unsafe conditions on the affected aircraft and the need to take prompt action to mitigate risks should the need arise. The FAA seeks comment regarding whether manufacturers who are discontinuing their continued operational safety program due to discontinuance of manufacturing operations should be required to send the design information regarding the affected aircraft to the FAA prior to discontinuing their continued operational safety program, so that the FAA can better issue airworthiness directives if an unsafe condition is discovered later.

Under proposed § 21.190(d)(10), the statement of compliance would continue to require a statement from the manufacturer that it will monitor and correct safety of flight issues with one important difference. The proposal would require the manufacturer to monitor and correct safety of flight issues through safety directives and a continued operational safety program that meets the specified consensus standard. This would replace the current requirement that the manufacturer monitor and correct through a continued airworthiness system. This proposed revision of “continued airworthiness system” to “continued operational safety program” is intended to better align regulatory terminology with the terminology used in existing FAA-accepted consensus standards. Continued operational safety programs established and maintained by manufacturers are designed to provide support throughout the service lives of their products. The program would include, but not be limited to, processes and procedures to monitor the airworthiness of the fleet and prevent the occurrence of safety of flight issues, and the

management and use of feedback processes to improve a product's design and production.

Current § 21.190(c)(6) requires a statement that, at the request of the FAA, the manufacturer will provide unrestricted access to its facilities. The FAA might require access to conduct oversight, audit compliance with applicable standards, take those actions necessary to verify unsafe conditions have been properly addressed, or respond to an aircraft accident or incident. Proposed § 21.190(d)(11) would revise this requirement to include a statement by the manufacturer that it will provide unrestricted access to all data necessary to determine compliance with the provisions of this section and other applicable requirements. By only specifying that a manufacturer will provide the FAA with access to its facilities, the current rule does not provide assurance that the FAA will be able to obtain access to the technical data. The proposal recognizes that obtaining access to only a manufacturer's facility may not be sufficient for the FAA to carry out its regulatory responsibilities and that access to data may be necessary to conduct oversight.

Proposed § 21.190(d)(12) would require the manufacturer's statement of compliance to include a statement that the manufacturer has established and maintains a quality assurance system that meets the requirements of § 22.185. The specific requirements that a quality assurance system must meet and the need for aircraft certificated as light-sport category aircraft to be produced under a production quality assurance system are discussed in the section IV.D.16 of this proposed rule addressing proposed § 22.185. By proposing that the manufacturer's statement of compliance contain a statement that the manufacturer has established and maintains such a system, the proposal further emphasizes the specific importance that the FAA attaches to producing light-sport category aircraft under a quality assurance system. Establishing and documenting a quality assurance system is critical in assuring that aircraft and aircraft

kits meet applicable design, production, and airworthiness requirements and are manufactured and tested in accordance with identified consensus standards.

b. Creation of an Amended Statement of Compliance

A light-sport category aircraft certificated before the effective date of this proposed rule would be able to continue to operate under the provisions of its airworthiness certificate. However, these aircraft would not be able to take advantage of the expanded capabilities in this proposed rule, to include conducting aerial work. Proposed § 21.190(e) would contain special provisions for aircraft certificated as light-sport category aircraft before the effective date of the final rule that would enable these aircraft to conduct aerial work operations. The proposed § 21.190(e) would permit the owner of an aircraft issued an airworthiness certificate in the light-sport category before the effective date of the final rule to submit an amended manufacturer's statement of compliance which would permit the conduct of certain aerial work operations designated by the manufacturer on the amended statement of compliance.

To show the aircraft is eligible for an amended statement of compliance, the statement would need to identify the aircraft by make, model, serial number, and date of manufacture. The statement would also be required to be made by the original aircraft manufacturer, as the original manufacturer is the source of the design and compliance data used to make the original statement and determine whether the aircraft's design and construction can withstand the expected or known loads associated with the designated aerial work operation. Unlike type-certificated aircraft designs, the FAA does not engage in showing and finding activities using the aircraft manufacturer's design and compliance data for light-sport category aircraft and therefore cannot make any determinations on the appropriateness of specific aerial work operations, even those that may be benign in nature. If a manufacturer is unwilling or unable to submit an amended statement of compliance or provide the data to a third party, the aircraft will not be authorized to

conduct aerial work operations. For an amended statement of compliance, the original manufacturer would be responsible for creating the document and listing those authorized aerial work operations.

A light-sport category aircraft certificated before the effective date of this rule would not have to meet the proposed part 22 requirements to obtain an amended statement of compliance. Instead, the statement would need to reference and reaffirm the statements made in the original manufacturer's statement of compliance and specify the particular consensus standards used to determine compliance. In doing so, the manufacturer would be reaffirming that the aircraft configuration still conforms to the manufacturer's design data and still complies with the original consensus standards, unless the aircraft was modified by the manufacturer or under the manufacturer's authorization. ASTM Standard F2972 requires the manufacturer to keep a permanent record of the documentation used to show compliance of each approved aircraft configuration produced to all applicable consensus standards and regulatory requirements in effect at the time of manufacture. The manufacturer would also be reaffirming that any safety of flight issues identified through the issuance of safety directives or a continued airworthiness system have been corrected by the manufacturer or in accordance with a manufacturer approved procedure. To make these reaffirmations, the aircraft and its maintenance records would need to be reviewed by the manufacturer so that it could determine that the aircraft continues to meet the consensus standards referenced in the original statement of compliance. The FAA notes that such action may be cost prohibitive; however, without the manufacturer's involvement in this process, any validation that the aircraft continues to meet the standards identified in the original manufacturer's statement of compliance would effectively not be possible. Validation could not occur without the manufacturer's data since the data supports compliance with the applicable consensus standards.

Additionally, the statement of compliance would be required to state that the design and construction of the aircraft provides sufficient structural integrity to enable safe operation of the aircraft during the performance of the specified aerial work operations and that the aircraft is able to withstand any foreseeable flight and ground loads. The manufacturer could accomplish this task while simultaneously evaluating the aircraft to reaffirm compliance with the manufacturer's original statement of compliance. The FAA notes that to comply with this provision, manufacturers would use consensus standards for performing aerial work. The proposal would require the amended statement of compliance to identify the consensus standards the aircraft complies with. The FAA anticipates that industry members will begin developing those standards after this proposal is published.

The proposal would also require that the amended statement of compliance be accompanied by revisions to the aircraft's operating instructions to indicate those aerial work operations that may be safely conducted. It would also require applicable revisions be made to the aircraft's maintenance and inspection program and flight training supplement necessary to accomplish any aerial work operations. These revisions could include, for example, any necessary maintenance tasks or inspections in preparation for, or because of, aerial work operations. If an aerial work operation could be accomplished using standard operational procedures, the aircraft's operating instructions should state this for each aerial work operation for which use of those procedures is appropriate.

#### 21. Removal of Light-Sport Marking Requirements

Proposed revisions to part 45 would eliminate the requirement in § 45.23(b) to mark light-sport category aircraft with "light-sport." This rule would not require owners to remove existing marks. However, aircraft owners would be allowed to remove the marks any time after the effective date of the final rule.

The FAA originally imposed the “light-sport” marking requirement in the 2004 final rule to clearly identify aircraft certificated in the light-sport category. As the proposal would significantly expand the parameters of those aircraft that could be certificated in the light-sport category, the proposal would eliminate the “light-sport” marking requirement. Previously, all aircraft certificated in the light-sport category could be operated by sport pilots and the marking readily identified those aircraft. As certain aircraft certificated in the light-sport category under the proposal may no longer meet the proposed eligibility requirements for operations by persons exercising sport pilot privileges, retaining the “light-sport” marking requirement would no longer serve the purpose of identifying those light-sport category aircraft that persons exercising sport pilot privileges could operate. As such, the FAA is concerned that retaining the “light-sport” marking requirement would be a source of confusion for persons exercising sport pilot privileges. As with other aircraft, a person exercising sport pilot privileges would need to evaluate an aircraft to determine whether the aircraft meets the parameters of those aircraft they are authorized to operate. In addition, information related to the aircraft certification category is included on the airworthiness certificate for each aircraft and is required per § 91.203(b) to be displayed at the cabin or cockpit entrance so that it is legible to passengers or crew.

#### E. Sport Pilot Certification and Privileges

Part 61 of title 14 prescribes the requirements for pilot and flight instructor certificates and ratings.<sup>41</sup> Pursuant to part 61, the FAA issues six grades of pilot certificates: student, sport, recreational, private, commercial, and airline transport pilot (ATP).<sup>42</sup> These grades of pilot certificates require increasing levels of pilot experience, testing, and associated privileges. Additionally, the FAA issues flight instructor

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<sup>41</sup> 14 CFR 61.1(a)(1).

<sup>42</sup> 14 CFR 61.5(a)(1).



certificates under subpart H of part 61 and flight instructor certificates with a sport pilot rating under subpart K of part 61.

The sport pilot certificate differs from higher grades of pilot certificates because the FAA does not issue category and class ratings on a sport pilot certificate. Upon the successful completion of the practical test for a sport pilot certificate, the FAA issues the applicant a sport pilot certificate without any category and class ratings and provides the pilot with a logbook endorsement for the category and class of aircraft for which the pilot is authorized to act as PIC (i.e., the category and class of aircraft in which the practical test was conducted).<sup>43</sup> To obtain privileges to operate an additional category or class of light-sport aircraft, the sport pilot must receive training and an endorsement from an authorized instructor for the additional privilege, pass a proficiency check from an authorized instructor (other than the instructor who trained them), and receive a logbook endorsement from the instructor who conducted the proficiency check.<sup>44</sup> The logbook endorsement from the authorized instructor who conducted the proficiency check certifies that the sport pilot is authorized for the additional category and class light-sport aircraft privilege.<sup>45</sup> An airmen application, known as FAA Form 8710-11, is also submitted to the FAA to document the addition of that new privilege.<sup>46</sup>

The flight instructor certificate with a sport pilot rating under subpart K differs from the flight instructor certificate issued under subpart H because it has limited privileges compared to a subpart H flight instructor. For example, a flight instructor with a sport pilot rating may only provide training and endorsements that qualify applicants for sport pilot certificates and privileges.<sup>47</sup> A flight instructor qualified under subpart H

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<sup>43</sup> 14 CFR 61.317.

<sup>44</sup> 14 CFR 61.321.

<sup>45</sup> 14 CFR 61.321(d).

<sup>46</sup> FAA Form 8710-11, Airman Certificate and/or Rating Application Supplemental Information and Instructions.

<sup>47</sup> 14 CFR 61.413, 61.415.

may provide training and endorsements to persons seeking a higher-grade of pilot certificate such as a recreational, private, or commercial pilot certificate.

Currently, a sport pilot may only operate an aircraft that meets the definition of light-sport aircraft in § 1.1. As previously discussed, the FAA is proposing to remove the definition of light-sport aircraft from § 1.1 and relocate the substantive requirements, with modifications, to § 21.190. As a result, the FAA is proposing to establish a new regulation, in § 61.316, that would prescribe performance and design limitations for the aircraft sport pilots can operate. Additionally, the FAA is proposing amendments that would modernize the sport pilot and sport pilot instructor regulations. These amendments would expand the types of aircraft a sport pilot may operate, expand sport pilot operational privileges, revise some testing requirements, and permit the use of FAA-qualified aviation training devices (ATD) and flight simulation training devices (FSTD) for sport pilot training credit. Additionally, the FAA proposes training and instructor endorsement requirements for persons seeking to operate aircraft with simplified flight control designations to ensure the safe operation of these new aircraft. These proposals are discussed in greater detail in the following subsections.

#### 1. Sport Pilot Seating Limitation

Currently, by definition in § 1.1, a light-sport aircraft has a maximum seating capacity of no more than two persons, including the pilot. Thus, sport pilots are limited to operating aircraft with two seats. Sport pilots are also limited under § 61.315(c)(4) to carrying one passenger. The FAA is proposing to increase the maximum seat capacity for airplanes that a sport pilot can operate to four seats but would retain the operational limitation for sport pilots that limits them to carrying a single passenger.

In considering whether to expand this two-seat limitation, the FAA reviewed the privileges and limitations that apply to recreational pilots, which are contained in § 61.101, because a recreational pilot certificate is the next higher grade of pilot

certificate and has very similar operating limitations to sport pilots. Currently, § 61.101(e)(1)(i) contains a general limitation that prohibits a recreational pilot from acting as PIC of an aircraft that is certificated for more than four occupants. The FAA adopted this requirement in 1989.<sup>48</sup> In the final rule that adopted the four-seat limitation for recreational pilots, the FAA determined that limiting recreational pilots to two-seat aircraft was unnecessarily restrictive notwithstanding that a recreational pilot, like a sport pilot, is limited to carrying a single passenger.<sup>49</sup> The FAA explained that the two-seat limitation was based on the premise that a recreational pilot certificate is intended for recreational purposes rather than transportation.<sup>50</sup> However, there are many basic aircraft with seating capacities of four seats and these general aviation aircraft are often used for student training or recreational flying.<sup>51</sup> At the time of the 1989 final rule, the FAA received overwhelming support for the four-seat occupancy limitation for recreational pilots.<sup>52</sup> Since then the NTSB has only recorded 49 accidents with a recreational pilot acting as PIC and only six of those accidents involved a fatality over a 30-year period.

Additionally, like recreational pilot certificates, the two-seat limitation for sport pilots is consistent with the premise that a sport pilot certificate is used for recreational purposes and not for carrying persons or property for compensation or hire. However, airplanes with seating capacities of four seats are often used for flight training and recreational flying while carrying only one passenger.

The FAA contends that the skill necessary to operate two seat airplanes versus four seat airplanes does not appreciably differ due to the similarity in design, weight and operational capabilities. Also, to determine whether expanding the two-seat limitation to

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<sup>48</sup> Certification of Recreational Pilots and Annual Flight Review Requirements for Recreational Pilots and Non-Instrument-Rated Private Pilots with Fewer than 400 Flight Hours, Final Rule, 54 FR 13028 (Mar. 29, 1989).

<sup>49</sup> 14 CFR 61.101(a)(1).

<sup>50</sup> *Id.*

<sup>51</sup> The FAA also recognizes that primary category aircraft certificated under § 21.24(a)(1) have a maximum seating capacity of not more than four persons, including the pilot. These aircraft are also purposed for personal use and recreation and use for flight training. The aircraft certification regulations and the associated operating limitations for primary category aircraft are similar but more restrictive (i.e., have higher standards) than the § 21.190 consensus standards certification process for light-sport aircraft.

<sup>52</sup> As stated in the 1989 final rule, approximately 100 commenters supported the proposal to expand occupancy limitations from two-seats to four-seats. 54 FR 13031.

four seats would adversely affect the safety of sport pilot operations, the FAA evaluated the training and testing requirements for recreational pilot certificates and compared those with the requirements for sport pilot certificates. In this comparison, the FAA determined that sport pilots are largely trained and tested to the same standards as recreational pilots.<sup>53</sup> Specifically, based on the Practical Test Standards (PTS) for sport pilots and for recreational pilots, the FAA finds that the knowledge and skills that a sport pilot must demonstrate on a practical test are virtually identical to the knowledge and skills that a recreational pilot must demonstrate on a practical test. Considering these testing similarities and that recreational pilots have been safely operating four-seat airplanes with only one passenger since 1989, the FAA finds that permitting sport pilots to operate airplanes with four seats would not adversely affect safety. Furthermore, based on an evaluation of the tasks a person must demonstrate to obtain a sport pilot certificate and the similar aircraft characteristics of a two-seat airplane and a four-seat airplane (e.g., design, weight, and operational capabilities), the FAA finds that the minimum pilot skills that are currently required for sport pilots to operate an airplane with two seats are commensurate with the skills required to operate a four-seat airplane.

The FAA recognizes that there may be airplanes that meet all elements of proposed light-sport category aircraft certification (e.g., those characteristics set forth by proposed § 22.100, except proposed paragraph (a)(2)) that have a maximum seating capacity of more than four seats. In this proposal, the FAA declines to expand sport pilot privileges as applicable to those airplanes with more than four seats. First, the FAA notes that part 61 provides different grades of pilot certificate. With each higher grade of pilot certificate comes expanded privileges. Considering this regulatory framework and the privileges provided to recreational pilots and private pilots, the FAA finds that it would

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<sup>53</sup> See Sport Pilot PTS for Airplane, Gyroplane, Glider, and Flight Instructor (FAA-S-8081-29 with Change 3) and Recreational Pilot PTS for Airplane, Rotorcraft/Helicopter, and Rotorcraft/Gyroplane (FAA-S-8081-3A).

be inappropriate to permit a sport pilot to operate an airplane with more than four seats. Doing so would provide a sport pilot with a greater operational privilege than a recreational pilot, which is a higher grade of pilot certificate than the sport pilot certificate. In other words, doing so would permit a sport pilot to be afforded a privilege that is reserved for a private pilot certificate holder without requiring the sport pilot to receive the additional training and experience that a private pilot applicant must receive and without requiring the sport pilot to be tested to same standards as a private pilot applicant.

The FAA expects that, without a maximum seating capacity set forth in the proposed regulation, the other proposed aircraft limitations in § 61.316 would indirectly prevent aircraft that sport pilots may fly from having more than four seats. The FAA recognizes; however, that it might be possible that some airplanes to have more than four seats and still meet the proposed aircraft limitations. As a general matter, airplanes with more than four seats become larger and more complex and require increasing pilot skills to operate safely. The FAA finds that permitting sport pilots to operate an airplane with more than four seats would introduce an unacceptable increase in risk to operations in the national airspace system (NAS). An airplane with 5, 6, or 7 seats would have a longer fuselage, a significant increase in weight, and need for a more powerful powerplant compared to a two- or four-seat airplane. As a result, the control pressures to operate the airplane would be greater and increase workload on the pilot. Additionally, the larger powerplants would create significantly more torque and affect directional control of the airplane. For example, increased torque would impose increased demand on the pilot to maintain directional control during the takeoff and climb. Upon evaluating the characteristics of larger airplanes that have more than four seats, the FAA finds that those larger airplanes have significantly different handling characteristics than an airplane with just two- or four-seats. Those different handling characteristics require more demanding

operational skills than those skills required to operate a two- or four-seat airplane. The FAA finds that the skills required to safely operate an airplane that has more than four seats require a higher grade of pilot certificate that includes additional experience, training, and testing that is greater than what a sport pilot is required to accomplish. For these reasons, the FAA is proposing a four-seat limitation for the airplanes that a sport pilot seeks to operate. Accordingly, the FAA is proposing a limitation in § 61.316(c) that would permit sport pilots to operate airplanes with a maximum seating capacity of four persons. However, the FAA proposes to retain the current operational limitation for sport pilots to carry no more than one passenger in any aircraft that a sport pilot can operate. The FAA finds that this limitation is consistent with sport pilot operations today and with the use of the FAA's safety continuum, which the FAA uses to assess risk.

## 2. Directional Control and Controlled Descent of Powered Aircraft

Currently, the light-sport aircraft definition does not expressly require an aircraft to have the capability to maintain directional control and a controlled descent in the event of a powerplant failure. The omission of this requirement in the regulations does not present a safety concern at this time because this control requirement is inherent in airplane manufacture and design and the light-sport aircraft definition excludes helicopters and powered-lift. For example, airplanes have the ability to maintain directional control and a controlled descent in the event of a partial or total powerplant failure. Given the aerodynamics, a pilot can normally glide the airplane to a safe landing if the powerplant stops functioning.

As discussed in section IV.E.8 of this preamble, the FAA is proposing to permit sport pilots to operate certain kinds of helicopters. However, the ability to maintain directional control and a controlled descent in the event of a powerplant failure is not inherent in all new helicopter designs (specifically multicopters). Some new helicopters

may not possess the ability to autorotate to a safe landing in the event of a powerplant failure.

To fit the construct of the FAA safety continuum, as well as the expectation for the use of new aircraft that can be safely operated by sport pilots, the FAA has determined that any aircraft (except balloons and airships) that a sport pilot operates must have the capability to establish a controlled descent and directional control in the event of a partial or complete power plant failure. Therefore, the FAA proposes in § 61.316(h) that a person with a sport pilot certificate may only act as PIC for those powered aircraft (which could include multicopters) whereby the loss of partial power would not adversely affect the directional control of the aircraft. Specifically, § 61.316 describes the sport pilot aircraft performance limitations and would require in proposed paragraph (h) that powered aircraft must provide the pilot an ability to maintain directional control and controlled descent in the event of a powerplant failure. As proposed, if the aircraft does not possess these capabilities (excluding balloons and airships), a sport pilot would not be able to act as PIC of the aircraft. This requirement would ensure that any aircraft a sport pilot operates is simple to control in the event of a powerplant failure, consistent with the aircraft that sport pilots are currently permitted to operate. Therefore, while the FAA proposes to expand the types of aircraft that sport pilots may operate, the FAA intends to permit sport pilots to operate only those aircraft that would require skills commensurate with the skills of a sport pilot today.

Notably, despite the implicit inclusion of this feature for airplanes, the FAA is not proposing to limit this requirement to helicopters. The FAA reasons that manufacturers may contemplate future airplane or other aircraft designs that do not include an inherent aerodynamic ability for the pilot to maintain directional control and a controlled descent in the event of a powerplant failure. The FAA proposes to impose this requirement for all powered aircraft that a sport pilot may seek to operate as PIC so advancements in

airplane technology would include this feature. This requirement would appropriately mitigate the risk to persons both on board the aircraft and on the ground that may be impacted by a powerplant failure emergency.

### 3. Sport Pilot Operational Privileges

Section 61.315 currently specifies the privileges and limitations of a sport pilot certificate. Currently, under § 61.315(c)(5), sport pilots are prohibited from conducting night operations. Also, the § 1.1 light-sport aircraft definition currently prohibits sport pilots from operating aircraft equipped with retractable landing gear (except for amphibious aircraft and gliders) and aircraft with a controllable pitch propeller. However, the FAA contends that, with the completion of additional training and obtaining a flight instructor qualifying endorsement, sport pilots can safely conduct these types of flight operations. Therefore, the FAA is proposing to add an exception to § 61.315(c)(5) that would permit a sport pilot to conduct night operations if the sport pilot meets certain training, endorsement, and experience requirements, which the FAA is proposing in new § 61.329. These provisions are discussed in greater detail in the next section. Likewise, the FAA is proposing to add a new provision, in § 61.315(c)(20), that would prohibit sport pilots from acting as PIC of an airplane with a retractable landing gear or a controllable pitch propeller unless a sport pilot meets the training and endorsement requirements proposed in § 61.331.

Specifically, the FAA currently uses additional training and instructor endorsements to enable certain flight operations, including the operation of complex, high altitude, and tailwheel airplanes.<sup>54</sup> These instructor endorsements are used today and are a proven method to validate pilot proficiency and qualifications. The following sections discuss these proposals in greater detail.

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<sup>54</sup> See § 61.31(e), (f), (g), and (i).



#### 4. Night Operations

As previously discussed, sport pilots are currently prohibited from conducting night operations. Section 1.1 defines “night” as the time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the Air Almanac, converted to local time. In support of the proposal to permit sport pilots to conduct night operations, the FAA acknowledges that many states in the U.S. have reduced daylight hours during the winter months. During those days with reduced daylight, sport pilots may be under pressure to complete a flight even after sunset due to weather or delays from unexpected events. A sport pilot who conducts an operation at night, as defined in § 1.1, is in non-compliance with the current prohibition in § 61.315(c)(5). The FAA emphasizes that non-compliance with the FAA’s regulations is unacceptable and subject to compliance or enforcement action. The FAA recognizes, however, that the reduced daylight hours in many northern states may result in sport pilots experiencing pressure to conduct flights before night. Due to unforeseen circumstances, these flights may become marginally non-compliant as they near the end of evening civil twilight. Because a sport pilot is not currently required to receive training for operating at night, any sport pilot operations that occur after the end of evening civil twilight create a safety risk. To mitigate that risk, the FAA proposes to permit sport pilots to qualify to operate at night by meeting certain training and experience requirements and by obtaining an endorsement from an authorized instructor. The FAA finds that, with this added training, the window of time during which sport pilots may conduct operations would be expanded thereby promoting better aeronautical decision-making by reducing the pressure on sport pilots to conduct flights within a certain period of time.

Specifically, to validate that sport pilots possess the necessary skill to safely navigate at night, the FAA proposes the following risk-mitigation training requirements in new § 61.329. Under proposed § 61.329(a) a sport pilot must receive at least three

hours of flight training at night from an authorized instructor and receive a logbook endorsement certifying that they are proficient in the operation of the aircraft at night. In addition, proposed § 61.329(b) requires that the sport pilot conduct at least one cross-country night flight, with a landing at an airport of at least 25 nautical miles from the departure airport, except for powered parachutes. Proposed § 61.329(c) would require the sport pilot to accomplish at least ten takeoffs and landings at night with an authorized instructor. Proposed § 61.329(d) would also set forth certain medical requirements: the PIC must either hold a medical certificate issued under part 67, subpart D, Third-Class Airman Medical Certificate, or meet the requirements of § 61.23(c)(3) as long as the person holds a valid U.S. driver's license. Additionally, the operation would be required to be conducted consistent with § 61.113(i). If there is any conflict between § 61.113(i) and proposed § 61.315(d)(4), then proposed § 61.315(d)(4) would take precedence.

A sport pilot may receive the night training and endorsement specified in § 61.329 from a person who holds either a flight instructor certificate issued under subpart H of part 61 or a flight instructor certificate with a sport pilot rating. However, before a flight instructor with a sport pilot rating may provide the night training and endorsement to a sport pilot seeking night privileges, the flight instructor must first receive the training and endorsement themselves. The FAA is, therefore, proposing to amend § 61.415, which prescribes the limits of a flight instructor certificate with a sport pilot rating, by adding new paragraph (n) to state that a flight instructor with a sport pilot rating may not provide training in an aircraft at night unless they have completed the night training and endorsement requirements specified in proposed § 61.329. The FAA notes that, upon publication of the final rule, there would be no sport pilot instructors who satisfy the new night training and endorsement requirements of § 61.329. Thus, as an initial matter, sport pilot instructors would receive the night training and endorsement from a subpart H flight instructor.

The FAA notes that the requirements in proposed § 61.329 largely mirror those required of private pilots who conduct operations at night as set forth by § 61.109, as well as current sport pilot experience requirements under § 61.313. The FAA recognizes that these training requirements are appropriate for private pilots to obtain the knowledge and skills necessary to conduct night operations safely and reasons that a sport pilot should conduct the same night training requirements before acting as PIC at night. After this training has been completed, the sport pilot would receive the endorsement from the authorized instructor, at which point they would be able to conduct night operations.

Currently, § 61.315(c)(5) explicitly restricts a sport pilot from acting as PIC at night. Therefore, as previously stated, the FAA proposes to amend § 61.315(c)(5) by adding an exception for sport pilots who seek privileges to operate an aircraft at night. Amended § 61.315(c)(5) would restrict night operations, except as provided in proposed § 61.329, which would contain the night operation training, experience and endorsement requirements. The FAA notes that a sport pilot seeking to act as PIC of an aircraft carrying a passenger at night would be required to satisfy the recent flight experience requirements in current § 61.57(b).<sup>55</sup>

#### 5. Airplanes with a Controllable Pitch Propeller or Aircraft with a Retractable Landing Gear

The FAA proposes to allow sport pilots to operate an airplane with a controllable pitch propeller or an aircraft equipped with retractable landing gear. The FAA contends that, similar to obtaining the privileges to conduct night operations, additional training and flight instructor endorsements would adequately qualify sport pilots to operate these aircraft safely. Assumptions made in the 2004 final rule suggesting that allowing a

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<sup>55</sup> Section 61.57(b)(1) states that, except as provided in § 61.57(e), no person may act as PIC of an aircraft carrying passengers during the period beginning 1 hour after sunset and ending 1 hour before sunrise, unless within the preceding 90 days that person has made at least three takeoffs and three landings to a full stop during the period beginning 1 hour after sunset and ending 1 hour before sunrise, and (i) that person acted as sole manipulator of the flight controls, and (ii) the required takeoffs and landings were performed in an aircraft of the same category, class, and type (if a type rating is required).

retractable landing gear would add unnecessary complexity and would not provide a safety benefit conflicted with other allowable privileges.<sup>56</sup> Subsequent amendments were made to the light-sport aircraft definition to permit retractable landing gear for amphibious light-sport airplanes and gliders.<sup>57</sup> The FAA contends that additional training and endorsements would allow sport pilots to operate airplanes with a controllable pitch propeller or aircraft with retractable landing gear even when not intended for water operations.

Currently, there is a population of sport pilot certificate holders who have never been permitted to operate an airplane with a controllable pitch propeller or an aircraft with retractable landing gear. The FAA finds that permitting these sport pilots to operate aircraft with these new capabilities without first receiving training would introduce an unacceptable safety risk to the NAS. To mitigate this risk, the FAA proposes to require the sport pilot to receive training and an endorsement from an authorized instructor validating proficiency. The FAA finds that requiring training in the operation of an airplane with a controllable pitch propeller or an aircraft with retractable landing gear would allow the sport pilot to become proficient with the use of these specific designs and capabilities before acting as PIC in the aircraft. Additionally, requiring the sport pilot to receive an endorsement from an authorized instructor certifying that the sport pilot is proficient in the operation of the aircraft that contains either a controllable pitch propeller or retractable landing gear would provide assurance that the pilot has acquired the skills necessary to operate those aircraft safely.

To enable sport pilots to operate airplanes with a controllable pitch propeller or aircraft with a retractable landing gear safely, the FAA finds it necessary to propose several new provisions. First, the FAA is proposing to amend current § 61.315, which

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<sup>56</sup> See e.g., 69 FR 44800 (“The FAA reiterates its original position that for aircraft other than gliders, retractable landing gear is inconsistent with the simplicity of the light-sport aircraft, and the training requirements for the sport pilot.”).

<sup>57</sup> 72 FR 19661.

contains the operational limitations of a sport pilot certificate, by adding new paragraph (c)(20). Proposed § 61.315(c)(20) would prohibit a sport pilot from operating an airplane with a controllable pitch propeller or an aircraft with retractable landing gear unless the sport pilot meets the requirements specified in proposed § 61.331. The FAA proposes to place the aforementioned training and endorsement requirements in new § 61.331.

Additionally, because controllable pitch propellers and retractable landing gear are design characteristics of an aircraft and the FAA would permit sport pilots to operate aircraft with those characteristics only if certain conditions are met, the FAA finds it necessary to carry those characteristics over to newly proposed § 61.316. Specifically, the FAA proposes in § 61.316(b) to permit a sport pilot to act as PIC of an aircraft that, since its original certification, has retractable landing gear or a controllable pitch propeller if the sport pilot meets the training and endorsement requirements specified in proposed § 61.331.

With respect to the training and endorsement requirements in proposed § 61.331, the FAA recognizes that a controllable pitch propeller and retractable landing gear are features of a complex airplane. Section 61.1 defines complex airplane to mean an airplane that has retractable landing gear, flaps, and a controllable pitch propeller. Notably, however, airplanes may contain only one of these three features (e.g., only a controllable pitch propeller or only retractable landing gear). For the reasons explained above, the FAA finds it necessary to require sport pilots to receive training and an endorsement from an authorized instructor for the operation of an airplane that has only one of these features. It is possible, however, for a sport pilot to receive training and an endorsement from an authorized instructor in a complex airplane pursuant to § 61.31(e). In this event, the FAA finds that the endorsement certifying that the pilot is proficient in the operation of a complex airplane should also count towards the endorsement that is proposed in § 61.331 for an airplane that has only a controllable pitch propeller or an

aircraft that has only retractable landing gear. Therefore, the FAA proposes rule language in § 61.331(a)(1) and (b)(1) to ensure that a sport pilot who has received the endorsement required under § 61.31(e) would not be required to receive a duplicative endorsement under proposed § 61.331.

The FAA notes that it is not proposing a minimum number of hours of training, similar to the lack of mandated training hours required in § 61.31(e) for the operation of a complex airplane.<sup>58</sup> Rather, the authorized instructor is tasked with determining the appropriate amount of training required, to culminate in the authorized instructor attesting to proficiency with an endorsement. The FAA has permitted training and instructor endorsements for all other grades of pilot certificate for these same privileges, including student pilots, and contends that this is also appropriate for sport pilots.

Furthermore, consistent with the FAA's proposed amendment to current § 61.415 to address the night training and endorsement for sport pilot instructors, the FAA finds it necessary to amend § 61.415 by adding proposed (l), which would require a sport pilot instructor to receive training and an endorsement in an airplane with a controllable pitch propeller or an aircraft with retractable landing gear, as appropriate, before providing flight training to a sport pilot in an aircraft with one of those features.

#### 6. Model-Specific Endorsement for Aircraft Certificated with a Simplified Flight Controls Designation (§§ 61.9, 61.31, 61.415, and 61.429)

As discussed in section IV.E.6 of this preamble, the FAA is proposing to establish a simplified flight controls designation in proposed § 22.180. Aircraft with a simplified flight controls design and designation would not have traditional flight controls available to the pilot. Currently, the FAA does not have a regulatory mechanism to require flight training and an instructor endorsement to validate proficiency for pilots seeking to operate aircraft certificated with a simplified flight controls designation.

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<sup>58</sup> Section 61.1 defines complex airplanes. Section 61.31(e) specifies the training and endorsement requirements.

The FAA recognizes that simplified flight control designs will vary from one aircraft to another (i.e., model to model). As such, piloting would not involve the commonality of experience that exists in aircraft with traditional flight controls.<sup>59</sup> Therefore, it is important that a pilot be qualified and validate competency for each simplified flight control make and model<sup>60</sup> of aircraft to validate competency in that unique design.<sup>61</sup> Furthermore, aircraft with simplified flight control designations may be operated by pilots other than sport pilots, resulting in the same safety concerns for pilots with higher grades of pilot certificates. Therefore, any qualification requirements to address the simplified flight control systems must apply broadly to persons who hold pilot certificates issued under part 61. Thus, the FAA proposes this qualification for simplified flight controls be attained by a training and endorsement and, in some cases, a practical test.

This section describes the requirements for pilots to act as PIC of an aircraft with a simplified flight controls designation. Section IV.E.7 further describes scenarios pertaining to practical tests where (1) a person seeks a pilot certificate in an aircraft with simplified flight controls, (2) a person has a pilot certificate with a simplified flight controls model-specific limitation and seeks to operate another model of aircraft category and class with a simplified flight controls designation, and (3) a person has a pilot certificate not limited to simplified flight controls (i.e., the person can act as PIC of an aircraft with traditional flight controls) but seeks to obtain privileges to act as PIC of a make and model with a simplified flight controls designation.

Due to the differing characteristics, as previously discussed, the FAA finds that additional training specific to the particular make and model of aircraft with a simplified

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<sup>59</sup> Unlike aircraft with simplified flight controls designation, there is commonality with traditional flight control systems. For example, airplanes have a control yoke, rudder pedals, trim, and a throttle. Helicopters have a cyclic, collective, throttle and anti-torque pedals.

<sup>60</sup> The FAA proposes to use the terms “make and model” in § 61.31(l) consistent with the manner in which they are used throughout part 61. Therefore, as a general matter, “make” refers to the manufacturer of the aircraft (e.g., Cessna, Piper, Cirrus, etc.). “Model” refers to the specific aircraft model (e.g., C152, C172, PA28-112, SR20, etc.).

<sup>61</sup> This is similar to the current requirement for student pilots to receive a model-specific endorsement under § 61.87(n) before conducting PIC operations.

flight controls designation is necessary to ensure a pilot is sufficiently proficient in the operation of that aircraft. Therefore, the FAA proposes to amend § 61.31 by adding new paragraph (l) to contain the qualification requirements for persons seeking to act as PIC of any aircraft with a simplified flight control designation. Specifically, proposed § 61.31(l)(1) would require pilots seeking to act as PIC of aircraft certificated with a simplified flight controls designation to obtain model-specific training in that aircraft from an authorized instructor. Additionally, proposed § 61.31(l)(2) would require the pilot to receive a logbook endorsement from an authorized instructor who has found the pilot proficient in the safe operation of that model-specific aircraft and the associated simplified flight control system. The FAA's proposal would permit any certificated pilot, regardless of certificate level, who holds the appropriate category and class to operate a simplified flight control-designated aircraft only after receiving the model-specific training and endorsement from an authorized flight instructor specific to the safe operation of each simplified flight control designated aircraft.

The authorized instructor in proposed § 61.31(l) may be a subpart H instructor or a sport pilot instructor. Before an instructor may provide flight training in an aircraft with a simplified flight controls designation, the instructor would be required to first receive the model-specific training and the accompanying endorsement to validate that the instructor is proficient in the safe operation of the aircraft. Because this would be a limitation in the sport pilot instructor logbook until the sport pilot instructor meets certain conditions, the FAA is proposing to amend current § 61.415 by adding new paragraph (m). Proposed § 61.415(m) would expressly limit the sport pilot instructor from providing training in an aircraft with simplified flight controls design and designation unless the sport pilot has received the model-specific training and endorsement required under proposed § 61.31(l). Additionally, the FAA is proposing an amendment to current § 61.429, which contains the requirements for a subpart H instructor seeking to exercise the



privileges of a flight instructor certificate with a sport pilot rating. Specifically, the FAA is proposing to add new paragraph (d) to current § 61.429 to state that a subpart H instructor seeking to exercise the privileges of their flight instructor certificate in a model-specific aircraft that has a simplified flight controls designation must meet the training and endorsement requirements specified in proposed § 61.31(l) before providing any flight training in the aircraft.

Initially, there would be no flight instructors who are qualified to provide flight training in an aircraft that has a simplified flight controls designation because the training and endorsement requirements in proposed § 61.31(l) are new. Thus, no one has yet received the training or endorsement necessary to act as PIC. The FAA is proposing to add new paragraph (m) to current § 61.195 to address this issue. The FAA intends for proposed § 61.195(m) to provide the initial cadre of flight instructors with an alternative to the training and endorsement requirements in proposed § 61.31(l) to enable industry to build the initial cadre of flight instructors who could provide the training and endorsement for aircraft with simplified flight control designations.

Specifically, proposed § 61.195(m) would permit instructor pilots that work with the manufacturer of aircraft with the simplified flight controls designation to provide training and endorsements to the initial cadre of authorized instructors and pilot examiners. This proposed provision would allow for the initial operation of aircraft with the simplified flight controls designation during and after the aircraft certification process for these new aircraft. An instructor pilot at the manufacturer for the aircraft would be one of the only individuals with significant experience operating the model-specific aircraft with simplified flight controls. Additionally, the instructor pilots are generally tasked with developing and validating training for the aircraft for the manufacturer. The FAA finds that the duties of an instructor pilot establish intricate knowledge of the aircraft's systems and components. The FAA has determined that it would be beneficial

to leverage the experience these instructor pilots have to create the initial cadre of authorized instructors who may provide training under proposed § 61.31(l).

To mitigate any safety risk that may result from allowing an instructor pilot to provide training in a model-specific aircraft, the FAA has decided to narrowly confine the training population to include only subpart H instructors. Thus, the FAA is proposing the provisions as a limitation to the flight instructor certificate pursuant to § 61.195 and not to sport pilot instructors. Because an instructor pilot would have significant experience in the model-specific aircraft and the training population would be narrowly confined, the FAA finds that proposed § 61.195(m) would not adversely affect safety.

In developing this proposal, the FAA recognized that any aeronautical experience obtained in an aircraft with a simplified flight controls designation would not be equal to the aeronautical experience obtained piloting aircraft with traditional flight controls. However, because aircraft with simplified flight controls designation would fall within the same category and class of aircraft as aircraft with traditional flight controls, pilots could seek to build flight time for higher certificates and ratings in much more simplistic aircraft. The FAA finds that aeronautical experience in aircraft with simplified flight controls designations would diminish the aeronautical experience in aircraft with traditional flight controls that is necessary to reinforce piloting skills in traditionally equipped aircraft. With that understanding, the FAA is proposing that any pilot time acquired while operating an airplane or helicopter with a simplified flight controls design and designation may not be used to satisfy certain pilot-in-command flight time requirements for a higher-grade certificate. Those pilot time experience limitations can be found in newly proposed § 61.9. For example, under proposed § 61.9(b), a person seeking a commercial pilot certificate with a rotorcraft category helicopter class rating may not use pilot time acquired in a helicopter with simplified flight control designation to meet the PIC flight time experience requirement in § 61.129(c)(2)(i), which requires

35 hours of PIC flight time in a helicopter. PIC experience in a helicopter with a simplified flight controls does not provide the same skills and experience a commercial pilot needs to conduct commercial operations in a helicopter with traditional flight controls that include unique skills like the conduct of an autorotation. Once a pilot obtains a helicopter class rating on their commercial pilot certificate, that pilot has commercial pilot privileges in many legacy helicopters as a general matter. It is therefore important for an applicant seeking a helicopter class rating on a commercial pilot certificate to continue to obtain the class-specific PIC flight time in a helicopter that has traditional flight controls.

#### 7. Conducting Practical Tests in an Aircraft Certificated with a Simplified Flight Controls Designation (§ 61.45)

Section 61.43 provides the general procedures for conducting a practical test. The completion of a practical test for a certificate or rating consists of performing the tasks specified in the areas of operation applicable to the airman certificate or rating sought. These tasks and maneuvers are contained in the ACS or the PTS, as appropriate. Current production aircraft, as well as those that obtain a simplified flight control designation in the future, may not be able to accomplish all the tasks required during the conduct of a practical test. For example, these aircraft may be unable to perform an aerodynamic stall or steep turns during a practical test, which are typically tested as an area of operation in the practical test. To account for these operational limitations, current § 61.45(b)(2) permits an applicant to use an aircraft with operating characteristics that preclude the applicant from performing all of the tasks required for the practical test; however, the applicant's pilot certificate is issued with an appropriate limitation.

The FAA recognizes that those aircraft having simplified flight controls may not be able to perform all of the tasks required by the ACS or PTS, as applicable. Applicants would be able to use the provision of § 61.45(b)(2) to complete the practical test in such

an aircraft; however, they would receive a limitation on their certificate specific to the make and model of aircraft with simplified flight controls that they tested in. Because the current rule language in § 61.45(b)(2) already provides for the issuance of a limitation in this instance, the FAA finds it unnecessary to propose an amendment to the provision. The FAA would, however, develop guidance to explain that, in the event an applicant uses an aircraft with simplified flight controls designation that is not capable of performing all the required tasks for a practical test, the aircraft limitation would be issued pursuant to § 61.45(b)(2). The limitation would likely be a model-specific limitation to effectively identify the aircraft the test was accomplished in and limit the pilot from operating another aircraft that may be able to perform tasks and maneuvers that the pilot was not trained or tested on.

Further, because simplified flight control characteristics may vary among aircraft due to rapid advances in aircraft automation and flight control technology, the FAA believes that additional safeguards are necessary for those practical tests taken in aircraft with simplified flight controls. Specifically, the FAA proposes new paragraph (g), which would set forth the requirements for an applicant taking a practical test for an initial pilot certificate, rating, or privilege in an aircraft with a simplified flight control designation. First, the examiner would have to agree to conduct the test in proposed § 61.45(g)(1). Additionally, the FAA proposes in § 61.45(g)(2) that the examiner also hold the appropriate category and class rating or privilege, the appropriate simplified flight controls training and model-specific endorsement, and an FAA authorization to conduct the test. It is important that the examiner is familiar with the make and model of the simplified flight control-designated aircraft before issuing a practical test to conduct the test safely and is familiar with the standards that an applicant must meet so as to demonstrate competency. The FAA finds that examiners must become familiar with the make and model through the training and endorsement requirements themselves before

conducting a practical test in the same aircraft. Proposed § 61.45(g)(3) would require the examiner to have the ability to assume control of the aircraft at any time to enable the safe conduct of the test, should the applicant perform poorly during the test and possibly put the aircraft in an unsafe flight condition.

Pilot applicants that successfully complete a practical test in one of these aircraft would then be issued a pilot certificate with a model-specific limitation<sup>62</sup> per § 61.45(b)(2) and proposed § 61.45(g)(4). Pursuant to § 61.45(g)(4), the model-specific limitation would be issued subject to the requirements of proposed § 61.45(h), which would explicitly limit a pilot who receives a category and class rating or privilege with a simplified flight controls limitation to operation of only that make and model of aircraft. Proposed § 61.45(h) would also detail the requirements under which a pilot could operate a different aircraft. First, if the pilot seeks to operate another make and model of aircraft with a simplified flight controls designation in the same category and class, then the person would be required to only receive training and an endorsement in accordance with proposed § 61.31(l). The person would not be required to take another practical test because the similarities between classes of aircraft are such that a training and endorsement would be sufficient to address operational differences with the simplified flight controls designs. However, should the pilot seek to operate a different category and class of aircraft with a simplified flight controls designation, the person would be required to successfully complete a practical test for that category and class of aircraft under proposed § 61.45(h)(2). This proposal is no different to the current status quo whereby a person holds a certificate with a category and class rating and seeks to operate an aircraft in a different category and class rating. Additionally, should a pilot who holds category and class ratings and is limited to acting as PIC of aircraft with simplified flight

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<sup>62</sup> Model-specific refers to the make and model of light-sport category aircraft that the applicant uses to test to receive a sport pilot certificate.

controls (i.e., has taken a practical test for those category and class ratings in only an aircraft with simplified flight controls) seek to act as PIC of an aircraft without a simplified flight controls designation, the person would also be required to successfully complete a practical test for that category and class of aircraft with traditional flight controls under proposed § 61.45(h)(2).<sup>63</sup> A practical test would be required to address the more significant operational differences between, first, different categories and classes of aircraft and, second, aircraft with a simplified flight controls designation and those with traditional flight controls.

For instructional purposes, the following table presents a sampling of scenarios pertaining to when a pilot is authorized or is seeking to operate an aircraft with simplified flight controls and the proposed requirements.

Table 1: Airman Certification Simplified Flight Controls Requirements

If you hold a -	And you are seeking -	Then you must complete -	Regulatory Reference
Sport Pilot Certificate with Rotorcraft-Helicopter Simplified Flight Controls Privilege with Model Specific Limitation	To operate another model of rotorcraft-helicopter with simplified flight controls	The training and endorsement required by proposed § 61.31(l).	Proposed § 61.45(h)(1)
Sport Pilot Certificate with Rotorcraft-Helicopter Simplified Flight Controls Privilege with Model Specific Limitation	A private pilot certificate with rotorcraft-helicopter rating (regardless of a simplified flight controls designation)	The requirements to receive a private pilot certificate, to include a practical test.	Part 61, subpart E, subject to proposed § 61.9
Private Pilot Certificate with a	To operate another model of rotorcraft-	The training and endorsement	Proposed § 61.45(h)(1)

<sup>63</sup> Because sport pilots are limited already to acting as PIC of rotorcraft-helicopters with simplified flight controls, a sport pilot seeking to act as PIC of another make and model of rotorcraft-helicopter with simplified flight controls would need only complete the training and endorsement in proposed § 61.31(l). By contrast, a sport pilot who holds airplane-single engine ratings limited to a make and model of airplane with simplified flight controls would be required to take a practical test if seeking to operate a single engine airplane with traditional flight controls. Likewise, a private pilot who took the private pilot practical test for single engine airplane ratings in a § 21.190 airplane with a simplified flight controls designation would be required to complete another practical test in an aircraft with traditional flight controls.

Rotorcraft Category and Helicopter Class Rating, Simplified Flight Controls Model Specific Limitation	helicopter with simplified flight controls	required by proposed § 61.31(l).	
Private Pilot Certificate with a Rotorcraft Category and Helicopter Class Rating, Simplified Flight Controls Limitation	To operate a Rotorcraft-Helicopter without Simplified Flight Controls	A practical test.	Proposed § 61.45(h)(2)
Private Pilot Certificate with a Rotorcraft Category and Helicopter Class Rating, Simplified Flight Controls Limitation	To operate an airplane with simplified flight controls	The requirements to add another category and class rating on a private pilot certificate, to include a practical test.	Proposed § 61.45(2) & part 61, subpart E
Private Pilot Certificate with a Rotorcraft Category and Helicopter Class Rating (no simplified flight controls model limitation)	To operate a Rotorcraft Helicopter with Simplified Flight Controls.	The training and endorsement required by proposed § 61.31(l).	Proposed § 61.31(l)

## 8. New Rotorcraft-Helicopter Privilege for Sport Pilots and Sport Pilot Instructors

Sport pilots and flight instructors with a sport pilot rating are currently unable to obtain a rotorcraft-helicopter (also referred in to in this preamble simply as helicopter) privilege because helicopters are excluded from the definition of light-sport aircraft.<sup>64</sup> The FAA did not include helicopters within the light-sport aircraft definition in 2004 because of helicopters' complexity in design, maintenance, manufacture, and operation.<sup>65</sup>

<sup>64</sup> See § 1.1, *Light-sport aircraft*.

<sup>65</sup> 69 FR 44869, 44793 (July 27, 2004).

At the time, the FAA did not anticipate that manufacturers would design simple-to-operate, low-performance helicopters that fit within the scope of the privileges afforded to the holder of a sport pilot certificate.

The FAA recognizes that manufacturers now have access to new technology enabling simple-to-fly helicopter designs not envisioned in 2004. For example, manufacturers have developed multicopters<sup>66</sup> with flight controls that would satisfy the simplified flight controls criteria during the aircraft certification process, as previously discussed. Aircraft with simplified flight controls may lack a typical helicopter cyclic or collective control and instead could use a joystick or steering wheel and push button controls (subject to certain requirements)<sup>67</sup> or a touchscreen interface that greatly reduce the piloting skills necessary to fly the aircraft. As discussed more fully in the discussion of proposed § 22.180, the aircraft certification process would establish the criteria for the simplified flight controls designation, which would include standards for the pilot interface, the loss of control prevention, and the ability for the pilot to safely discontinue flight.

The FAA proposes to amend part 61, subpart J, to allow sport pilots to operate certain simple-to-fly helicopters. Specifically, the FAA proposes to permit sport pilots to operate new helicopters certificated under the proposed § 21.190 that include the simplified flight control designation. First, the FAA is proposing a limitation in § 61.316(a)(9) that would limit the kinds of helicopters that sport pilots may operate to those helicopters that have been certificated with a simplified flight controls design and designation. To facilitate integration of new simplified flight control helicopter operations under this subpart, the FAA also proposes amendments to §§ 61.311 and

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<sup>66</sup> A multicopter is a rotorcraft that can have more than one rotor providing lift. Although multicopters are helicopters by definition, multicopters differ from the conventional helicopter models originally considered during the 2004 rulemaking because the takeoff and landing are intended to be automated and not require extensive pilot training and skill.

<sup>67</sup> For example, as previously discussed, a joystick controller that is used to select flight commands or move a cursor on a display could qualify as a simplified flight control design.



61.313, which are discussed below. The FAA’s current proposal aligns with the original intent of the 2004 final rule promulgating the sport pilot certificate and light-sport aircraft definition, which was to allow sport pilots to operate simple-to-fly aircraft.

To facilitate helicopter operations for sport pilots, the FAA proposes in § 61.311 to include “helicopter” in the list of aircraft to which flight proficiency requirements apply and to add helicopter-specific areas of operation and tasks that would apply to sport pilot certificate applicants seeking a rotorcraft-helicopter privilege. These areas of operation are key to attaining competency in the operation of helicopters and are not otherwise covered by existing areas of operation. Sport pilots seeking a helicopter simplified flight controls privilege will still need to accomplish the other areas of operation listed in current § 61.311, as appropriate. Therefore, the FAA would require that a sport pilot applicant log ground and flight training from an authorized instructor on heliport operations in proposed § 61.311(c) and hovering maneuvers in proposed § 61.311(d) in addition to the existing areas of operation and tasks applicable to helicopters (e.g., takeoffs, landings, performance maneuvers). While these proposed areas of operation and their applicable tasks would be applicable specifically to helicopters, conversely, the FAA recognizes that there are areas of operation that are inherently inapplicable to helicopters: specifically, ground reference maneuvers, slow flight, and stalls. Therefore, the FAA proposes to except helicopters from these areas of operation in the flight proficiency requirements of § 61.311.<sup>68</sup> As discussed in the following section, because the practical test for a sport pilot certificate for a rotorcraft-helicopter rating would include these areas of operation, training should involve proficiency for the tasks listed under the applicable areas of operation in the regulation, which are reflected in the Sport Pilot Helicopter ACS (see section IV.E.9).

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<sup>68</sup> The FAA notes that the paragraph designations of the areas of operation in § 61.311 would change based on the addition of helicopter-specific areas of operation.

Because of the unique operations and tasks associated with helicopter operations in the national airspace system, applicants must obtain certain and specialized training and experience, as with any person seeking a certificate, rating, or privilege. These unique operating characteristics include the ability to hover over specific locations, operate in confined spaces and land in unique locations such as sloped terrain, buildings, or other man-made structures. As a result, the FAA contends that helicopter operations impose an unacceptable risk to the general public and other aircraft operating in the national airspace system unless an applicant accomplishes these minimum helicopter flight experience and training requirements.

First, with the proposed addition of flight simulation training device and aviation training device credit paragraphs in § 61.313, as discussed in section IV.E.11 of this preamble, the FAA proposes to renumber § 61.313. Specifically, current § 61.313(a) through (h) would become § 61.313(a)(1) through (8). As subsequently discussed, the FAA proposes to establish the aeronautical experience requirements for the newly proposed rotorcraft-helicopter privileges, which would be § 61.313(a)(9). As proposed, an applicant for a sport pilot certificate who seeks to obtain a helicopter rating would be required to log at least 30 hours of helicopter flight time, 15 hours of flight training, and 5 hours of solo flight. The FAA proposes these minimum experience requirements because the minimum recreational pilot grade of pilot certificate seeking a helicopter rating requires comparable minimum experience requirements.

The FAA contends that the minimum experience requirements for a recreational pilot to obtain a helicopter rating would also be appropriate for a sport pilot certificate because the operational limitations for sport pilots are virtually identical to those for recreational pilots. For example, both sport pilots and recreational pilots are limited to carrying only one passenger, operations below 10,000 feet MSL, a minimum of 3 miles of visibility, prohibition to operate in class A/B/C/D airspace, and a prohibition for night

operations. One substantive difference is that recreational pilot applicants are required to obtain 10 more total hours of experience. Another difference is that recreational pilots have more restrictive cross-country operational limitations. However, because helicopters have unique operating capabilities and limitations and additional risks to mitigate including those associated low altitude operations, the FAA contends that the minimum training and experience requirements for recreational pilots seeking an initial helicopter rating is also appropriate for sport pilot applicants.

Proposed § 61.313(a)(9) would also require applicants to complete at least:

- two hours of flight training enroute to an airport more than 25 nautical miles from where the applicant normally trains;
- three takeoffs and landings at the airport located more than 25 nautical miles from where the applicant normally trains;
- three hours of solo flying in the aircraft for the rating sought on the applicable areas listed in § 61.98; and
- three hours of flight training with an authorized instructor on the areas specified in § 61.311 in preparation for the practical test within the preceding two calendar months from the month of the test.

For the reasons explained in the preceding paragraphs, the FAA proposes these aeronautical experience requirements for sport pilots seeking to add rotorcraft-helicopter privileges because of the unique operational capability of helicopters and the experience requirements listed for a recreational pilot with almost identical operating privileges.

In addition to proposing to allow sport pilots to hold privileges for helicopters, the FAA is likewise proposing to allow sport pilot instructors to obtain or add helicopter privileges to their instructor privileges. Upon reviewing the current flight proficiency requirements in § 61.409 and the current aeronautical experience requirements in § 61.411, the FAA finds that a sport pilot instructor seeking a helicopter privilege should

meet similar flight proficiency and experience requirements as a sport pilot instructor seeking an airplane category single-engine class privilege. As explained in section IV.E.10, a person seeking to add a helicopter privilege to a sport pilot instructor certificate would be required to successfully complete a knowledge and practical test, consistent with the FAA's proposal to require a person seeking a sport pilot instructor certificate with an airplane single-engine class privilege to complete a knowledge and practical test.

Under proposed § 61.409, flight instructors would be required to log ground and flight training on the areas of operation that apply to other categories of aircraft, as appropriate, and on the newly proposed areas of operation that are applicable only to helicopters. Specifically, the FAA proposes to add areas of operation that would require a person seeking a sport pilot instructor certificate with a helicopter privilege to receive training on heliport operations and hovering maneuvers. The FAA notes that these two additional areas of operation are consistent with the areas of operation that the FAA proposes to add to the areas of operation in the flight proficiency requirements of § 61.311 for a person seeking a sport pilot certificate with a helicopter privilege. Finally, the FAA also proposes to add a "special operations" area of operation for helicopters. The base tasks under "special operations" are contained within the Sport Pilot Helicopter ACS under the area of operation labeled "takeoffs, landings, and go-arounds"; therefore, there is no discrepancy between the foundational flight proficiency expectations from a sport pilot to a sport pilot flight instructor pertaining to these special operation tasks. Rather, the FAA is simply aligning the formatting and organization of the Sport Pilot Flight Instructor Helicopter ACS (as it pertains to special operations) with that of the Flight Instructor Helicopter ACS.

While these proposed areas of operation and their applicable tasks would be applicable specifically to helicopters, conversely, the FAA recognizes that there are areas

of operation that are inherently inapplicable to helicopters: specifically, ground reference maneuvers, slow flight, and stalls. Therefore, the FAA proposes to except helicopters from these areas of operation in the flight proficiency requirements of § 61.409.<sup>69</sup> As discussed in the following section, because the practical test for a sport pilot certificate for a rotorcraft-helicopter rating would include these areas of operation, training should involve proficiency for the tasks listed under the applicable areas of operation in the regulation, which are reflected in the Sport Pilot Flight Instructor Helicopter ACS (see section IV.E.9).

In addition, the FAA proposes to add new aeronautical experience requirements to current § 61.411 for applicants seeking a sport pilot instructor certificate with a helicopter privilege. The FAA has determined that the aeronautical experience required for instructional privileges in a helicopter should mirror the aeronautical experience required for instructional privileges in an airplane. Specifically, proposed § 61.411(h)(1) would require an applicant for a flight instructor certificate with a sport pilot rating seeking a rotorcraft-helicopter privilege to complete at least 150 hours of flight time as a pilot. Under proposed § 61.411(h), this flight time must include at least:

- 100 hours of flight time as PIC in powered aircraft;
- 50 hours of flight time in a rotorcraft-helicopter;
- 25 hours of cross-country flight time;
- 10 hours of cross-country flight time in a rotorcraft-helicopter; and
- 15 hours of flight time as PIC in a helicopter.

The FAA reasons that helicopter experience requirements for a sport pilot instructor should be consistent with the airplane experience requirements for a sport pilot

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<sup>69</sup> The FAA notes that the paragraph designations of the areas of operation in § 61.409 would change based on the addition of helicopter-specific areas of operation. Additionally, during the pendency of this rulemaking, the FAA noted a technical omission in the area of operation “soaring techniques.” Specifically, soaring techniques are only applicable to gliders, yet this specificity is not present in the regulatory text. Therefore, the FAA proposes to add applicability language indicating this area of operation is only for gliders.

instructor for the following reasons. Helicopters and airplanes are the predominant aircraft that operate in the NAS. With the helicopter privilege being a new privilege to be added to the sport pilot instructor certificate, the FAA finds it reasonable to take a conservative approach and mirror the aeronautical experience requirements that apply to a sport pilot instructor seeking an airplane single-engine privilege. Those aeronautical experience requirements in § 61.411 that apply to a person seeking instructional privileges in a single-engine airplane have been deemed a reasonable level of minimum aeronautical experience since 2004. The FAA does not find any reason to adopt lesser experience requirements for a helicopter privilege at this time given that both airplanes and helicopters have broad access to the NAS, extensive operational capabilities, and are likely the greatest volume of privileges sought by flight instructors.

The FAA recognizes that, initially, there would be no sport pilot instructors who are qualified to provide training for a sport pilot helicopter privilege. To provide flight training to a sport pilot seeking a helicopter privilege, the sport pilot instructor must first obtain the helicopter privilege on their sport pilot certificate before being eligible to obtain the necessary privileges on their sport pilot instructor certificate. In addition, because sport pilots would be limited to operating helicopters with simplified flight control designations, a sport pilot instructor would also be required to obtain the training and endorsement for aircraft with a simplified flight controls designation required by proposed § 61.31(l).

To address the initial lack of qualified sport pilot instructors, the FAA is proposing to rely on subpart H instructors who already hold rotorcraft category helicopter class ratings on their flight instructor certificates. As discussed in the previous section, the FAA is proposing an amendment to § 61.195(m) that would enable these subpart H flight instructors to receive training and an endorsement at a manufacturer for helicopters with simplified flight controls. Upon obtaining the training and endorsement from an

instructor pilot at the manufacturer, the subpart H instructor would be qualified to provide flight training to a sport pilot instructor or a sport pilot who seeks to obtain a helicopter privilege and the § 61.31(l) training and endorsement. This initial reliance on subpart H flight instructors would establish the initial groups of sport pilots and sport pilot instructors with helicopter privileges.

In summary, the FAA seeks to facilitate the operation of certain simple to fly helicopter (i.e., those with simplified flight controls design and designation) for sport pilots and sport pilot flight instructors. The FAA's proposed amendments to §§ 61.311, 61.313, 61.409, and 61.411 would validate that sport pilots seeking to operate simplified flight control rotorcraft-helicopters and flight instructors who instruct in these aircraft are sufficiently trained and tested. As a result, the FAA's proposals balance the demand to enable these helicopter operations while maintaining a rigorous level of training and checking to enable safe operations in the NAS. Sport pilots or flight instructors with a sport pilot rating will not be permitted to operate helicopters without the simplified flight controls design and designation.

#### 9. Sport Pilot and Sport Pilot Flight Instructor for Rotorcraft-Helicopter; Incorporation by Reference

Currently, the required tasks, criteria, and standards for successful completion of a practical test are outlined for sport pilots in three published PTS.<sup>70</sup> However, because helicopters cannot be certificated under the current § 21.190 and a rotorcraft-helicopter privilege is not available to sport pilots because by definition a helicopter cannot be a light-sport aircraft, a PTS does not currently exist for sport pilots seeking a rotorcraft category, helicopter class privilege.

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<sup>70</sup> Sport Pilot and Sport Pilot Flight Instructor Rating Practical Test Standards for Airplane Category, Rotorcraft Category, and Glider Category; Sport Pilot and Sport Pilot Flight Instructor Rating Practical Test Standards for Lighter-Than-Air Category; Sport Pilot and Sport Pilot Flight Instructor Rating Practical Test Standards for Powered Parachute Category and Weight-Shift-Control Category.

In collaboration with the aviation industry and the FAA's routine review processes, the FAA previously identified the need for a new, systematic approach to testing that would (1) provide clearer standards, (2) consolidate redundant tasks, and (3) connect the standards for knowledge, risk management, and skills to the knowledge and practical tests. Therefore, the FAA began to establish the ACSs in 2011 to enhance the testing standard for the knowledge and practical tests. The goal in creating the ACS was to drive a systematic approach to the airman certification process, including knowledge test question development and the conduct of the practical test. In cooperation with the ACS Working Group, established through the Aviation Rulemaking Advisory Committee (ARAC),<sup>71</sup> the FAA integrated “aeronautical knowledge” and “risk management” elements into the existing areas of operations and tasks set forth in the PTS. Therefore, the ACS is a comprehensive presentation integrating the standards for what an applicant must know, consider, and do to demonstrate proficiency to pass the tests required for issuance of the applicable airman certificate or rating.

Because the FAA is actively converting all PTSs to ACSs in collaboration with the ACS Working Group, the FAA does not find it appropriate to draft a Sport Pilot PTS for Rotorcraft-Helicopter, as the other Sport Pilot testing standards are situated. Rather, the FAA has drafted two new ACSs for helicopters with simplified flight controls: (1) Sport Pilot for Helicopter – Simplified Flight Controls ACS, FAA-S-ACS-26 (Sport Pilot Helicopter ACS) and (2) Sport Flight Instructor for Helicopter – Simplified Flight Controls ACS (Sport Flight Instructor Helicopter ACS). Each ACS establishes the aeronautical knowledge, risk management, and flight proficiency standards for sport pilot practical tests and flight instructor proficiency checks for light-sport category aircraft in the rotorcraft-helicopter class for sport pilots and for sport pilots with a flight instructor

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<sup>71</sup> The ARAC is a body established under the Federal Advisory Committee Act, 5 U.S.C. app. 2. The ARAC ACS Working Group is comprised of the FAA, advocacy groups, instructor groups, training providers, academic institutions, and labor organizations.



rating. The Sport Pilot Helicopter ACS contains the following areas of operation: preflight preparation; preflight procedures; airport and heliport operations; hovering maneuvers; takeoffs, landings, and go-arounds; performance maneuvers; navigation; emergency operations; and post-flight procedures. Similarly, the Sport Flight Instructor for Helicopter contains the following areas of operation: fundamentals of instructing; technical subject areas; preflight preparation; preflight lesson on a maneuver to be performed in flight; preflight procedures; airport and heliport operations; hovering maneuvers; takeoffs, landings, and go-arounds; fundamentals of flight; performance maneuvers; emergency operations; special operations; and postflight procedures.

Similar to the current practical test and PTS/ACS framework for sport pilots, the FAA proposes to incorporate the two ACSs into the regulations to delineate what an applicant must demonstrate on a practical test to attain privileges for a sport pilot certificate with a rotorcraft-helicopter privilege or flight instructor certificate with sport pilot rating and rotorcraft-helicopter privilege. First, the FAA proposes to revise § 61.307, which sets forth the required tests an applicant must take to obtain a sport pilot certificate. Specifically, proposed new § 61.307(b)(1) would precisely reflect the standards that a person must successfully demonstrate on a practical test for a sport pilot certificate with rotorcraft-helicopter privilege: those knowledge, risk management, and skill elements for each area of operation on the Sport Pilot Helicopter ACS. Proposed new § 61.307(b)(2) provides the required incorporation by reference language, including how the Sport Pilot Helicopter ACS is made readily available to the public. Similarly, the FAA proposes to revise § 61.405, which sets forth the required tests an applicant must obtain to obtain a flight instructor certificate with a sport pilot rating. Proposed new § 61.405(b)(3) would precisely reflect the standards that a person must successfully demonstrate on a practical test for a flight instructor certificate with a sport pilot certificate rotorcraft-helicopter privilege (i.e., those knowledge, risk management, and

skill elements for each area of operation on the Sport Flight Instructor Helicopter ACS). Proposed new § 61.405(b)(4) provides the required incorporation by reference language and how the Sport Flight Instructor Helicopter ACS is made available to the public.

Incorporation by reference is a mechanism that allows Federal agencies to comply with the requirements of the Administrative Procedure Act (APA) to publish rules in the *Federal Register* and the CFR by referring to material published elsewhere.<sup>72</sup> Material that is incorporated by reference has the same legal status as if it were published in full in the *Federal Register*. In accordance with 5 U.S.C. 552(a) and 1 CFR part 51,<sup>73</sup> the FAA makes the Sport Pilot ACS for Rotorcraft-Helicopter reasonably available to interested parties by providing free online public access to view on the FAA Training and Testing website at [faa.gov/training\\_testing](http://faa.gov/training_testing). The ACS is available for download, free of charge, at the provided web address. The FAA will continue to provide the ACS to interested parties in this manner. In addition to the free online material on the FAA's website, printable versions are available from the FAA. Additionally, all ACSs proposed to be incorporated by reference are contained in the docket for this NPRM for inspection.

The FAA recognizes that on December 12, 2022, the FAA published the Airman Certification Standards and Practical Test Standards for Airmen; Incorporation by Reference (ACS IBR) NPRM.<sup>74</sup> As it pertains to this NPRM, the ACS IBR NPRM proposed to revise certain part 61 regulations to incorporate the three aforementioned PTSs into the requirements for sport pilots (see footnote 70). The FAA will reconcile this proposal with the ACS IBR final rule as appropriate.

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<sup>72</sup> 5 U.S.C. 552(a), which states, “except to the extent that a person has actual or timely notice of the terms thereof, a person may not in any manner be required to resort to, or be adversely affected by, a matter required to be published in the *Federal Register* and not so published. For the purpose of this paragraph, matter reasonably available to the class of persons affected thereby is deemed published in the *Federal Register* when incorporated by reference therein with the approval of the Director of the *Federal Register*.”

<sup>73</sup> 5 U.S.C. 552(a) requires that matter incorporated by reference be “reasonably available” as a condition of its eligibility. Further, 1 CFR 51.5(a)(2) requires that agencies seeking to incorporate material by reference discuss in the preamble of the proposed rule the ways that the material it proposes to incorporate by reference is reasonably available to interested parties and how interested parties can obtain the material.

<sup>74</sup> 87 FR 75955.

10. Require Sport Pilots and Flight Instructors with a Sport Pilot Rating Seeking to Add an Airplane or Helicopter Privilege to Accomplish a Knowledge and Practical Test

Currently, to obtain a sport pilot certificate or a flight instructor certificate with a sport pilot rating, a person must pass a practical test with an examiner in the category and class of aircraft for the initial privileges for that certificate.<sup>75</sup> Once a person possesses a sport pilot certificate or flight instructor certificate with a sport pilot rating and wishes to add privileges to their certificate, the person must pass a proficiency check with an authorized instructor rather than a practical test with an examiner.<sup>76</sup> This proficiency check requirement currently applies to a person seeking to add an airplane single engine privilege to their certificate. Specifically, under the current framework of § 61.321, a person seeking to obtain privileges to operate an additional category or class of aircraft must (1) receive a logbook endorsement validating they received training on certain aeronautical knowledge and flight proficiency requirements; (2) complete a proficiency check; and (3) receive an endorsement certifying they are proficient in the applicable areas of operation and aeronautical knowledge areas; and (4) complete an application. Similarly, under the current framework of § 61.419, a certificated flight instructor with a sport pilot rating seeking to provide training in an additional category or class of aircraft must meet the same qualifying conditions (i.e., training, endorsements, and a proficiency check).

Given the proposed expansion of certificated light-sport category aircraft that a sport pilot may operate and the addition of rotorcraft-helicopters as light-sport category aircraft, the FAA contends that a proficiency check with an authorized instructor is no longer a sufficient method of evaluation or validation when qualifying a sport pilot or flight instructor with a sport pilot rating to operate or provide training in an airplane or

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<sup>75</sup> 14 CFR 61.307, 61.405.

<sup>76</sup> 14 CFR 61.321, 61.419.

helicopter in the national airspace system. Therefore, the FAA is proposing to amend §§ 61.321 and 61.419 to require sport pilots and flight instructors with a sport pilot rating seeking to add an airplane or helicopter privilege to their existing sport pilot certificate or flight instructor certificate, to accomplish a knowledge test and practical test under §§ 61.307 and 61.405, respectively.

With the expansion of the aircraft models, weight, and speed that a sport pilot may operate under proposed § 61.316, performance and design limitations and the proposed addition of a rotorcraft-helicopter privilege, the FAA contends that a knowledge and practical test is necessary to appropriately validate that a sport pilot can conduct these airplane and helicopter operations safely. The rigor of an FAA knowledge and practical test using FAA-approved certification standards is significantly greater than that of a proficiency check conducted by a flight instructor. FAA examiners are trained and qualified annually to validate that the conduct of a practical test meets specific standards and criteria during the evaluation of an applicant. The FAA believes that the use of the airmen certification standards qualifying a pilot for a certificate, rating, or privilege will appropriately mitigate the risk associated with the expansion of flight operations by sport pilots in the NAS. In other words, the aircraft may now vary and perform in such an extensive way such that a proficiency check can no longer adequately validate that a pilot can proficiently operate a light-sport category airplane single engine or rotorcraft-helicopter safely in the national airspace system.

Therefore, the proposed knowledge and practical test requirement would validate competency by replacing the regulatory requirements in §§ 61.321 and 61.419 that currently permit the conduct of a proficiency check to obtain a new airplane or helicopter privilege for sport pilots and other pilots who hold a higher grade of certificate who want

to add that category and class privilege at the sport pilot level.<sup>77</sup> Specifically, proposed § 61.321(e) would require a person who seeks to add an airplane single-engine land or sea or rotorcraft-helicopter land or sea privilege to their pilot certificate to accomplish a knowledge and practical test for that category privilege, as specified in § 61.309.

Similarly, proposed § 61.419(e) would require a person who seeks to add an airplane single engine land or sea or rotorcraft-helicopter land or sea privilege to their sport pilot flight instructor certificate to accomplish a knowledge and practical test for that category privilege, as specified in § 61.405. Because these regulations require compliance with §§ 61.307 and 61.419, the practical tests would be aligned to the Sport Pilot Helicopter ACS as proposed in §§ 61.307(b)(1) and 61.405(b)(3), as applicable, for a rotorcraft-helicopter privilege. As previously noted, the ACS IBR rulemaking would address the material on practical tests for an airplane single engine privilege in the light-sport category, and the FAA will reconcile the proposals as the respective rulemakings progress. The FAA notes that it is retaining §§ 61.321(a) and (c) and 61.419(a) and (c); therefore, these pilots must complete the required training and obtain an authorized instructor recommendation before evaluation by an examiner authorized by the FAA.

#### 11. Aviation Training Device or Flight Simulation Training Device Credit, Removal of Certain Light-Sport Aircraft References, and Other Amendments

The FAA proposes two additional amendments to support modernization of the sport pilot regulations. Currently, the FAA does not permit the use of FSTDs or ATDs to meet sport pilot experience requirements for a certificate or rating. First, the FAA proposes to permit sport pilot applicants to use a qualified FSTD or a FAA-approved ATD (basic or advanced) to meet some of the experience requirements for a sport pilot certificate through the proposed § 61.313(b). Specifically, the FAA would permit sport

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<sup>77</sup> The FAA notes that the provision would apply if a pilot held a higher grade certificate as well. For example, if a pilot held a commercial pilot certificate with rotorcraft category and helicopter class ratings and sought to operate a light sport category airplane single engine land, the pilot would be required to take the practical test under this proposal.

pilots to use up to 2.5 hours of training credit in an FSTD and ATD representing the appropriate category and class of aircraft to meet the experience requirements of part 61. The FAA notes that the time in an FSTD or an ATD may be combined to meet the 2.5 hours of training, but the proposed regulation does not permit 2.5 hours in each device independently to count towards the experience requirements.<sup>78</sup>

The FSTD and ATD credit allowance proposal is consistent with the FAA's long-standing regulations throughout part 61 that allow simulation credit under certain circumstances. Furthermore, for those part 61 flight schools or those flight school operators who possess a part 141 air agency certificate, this proposal provides training device credit for pilots pursuing an initial pilot certificate or rating. In support, the FAA reasons that permitting the use of FAA evaluated, qualified, and approved FSTDs and ATDs allows students to conduct procedural tasks of various maneuvers in advance of doing those same tasks in an aircraft, thereby reducing the risk of making mistakes during the flight portion of the training and when practicing emergency procedures. Allowing pilot time credit in an FSTD and ATD reduces risk for those students or pilots in training, who then will accomplish those same tasks or maneuvers in an aircraft. Moreover, conducting training in FSTDs and ATDs reduces cost, teaches safe operational procedures in advance of flight operations, permits practicing emergency procedures without undue risk, and ultimately reduces risk during pilot training.

Second, the FAA proposes conforming amendments to remove reference to light-sport aircraft in §§ 61.45, 61.313, and 61.325. The removal of the reference to light-sport aircraft in subpart J is consistent with the FAA's proposal to remove the definition for these aircraft in § 1.1. Where appropriate, the FAA proposes that the reference to light-sport aircraft will be replaced with a reference to newly proposed § 61.316, which sets

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<sup>78</sup> For example, a person may complete 1 hour of training in an FSTD and 1.5 hours in an ATD to meet the 2.5 hours comprehensively. However, a person may not count 2.5 hours in an FSTD and 2.5 hours in an ATD.

forth the performance limitations for the aircraft a sport pilot may operate. As explained in section IV.B.2 of this preamble, this change in terminology is accompanied by broadening some of the limitations that currently exist in the definition of light-sport aircraft in § 1.1.

Section 61.3 speaks to pilot certificates, ratings, and authorizations that are required to operate aircraft in the United States. Currently, the privileges provided in § 61.313 are not codified in § 61.3. The FAA also proposes a conforming amendment to § 61.3 that adds a new paragraph requiring that a sport pilot exercising the privileges listed in § 61.313 receives a qualifying logbook endorsement for the appropriate category and class privilege, as applicable. This clarification to § 61.3 is required because sport pilots do not obtain a rating issued on a sport pilot certificate, but instead they receive an endorsement in their logbook facilitating the appropriate category and class “privilege,” as referenced in § 61.317.

Finally, during this rulemaking, the FAA noted that § 61.305 is improperly formatted, as it sets forth a paragraph (a) but no corresponding paragraph (b). Therefore, the FAA is proposing to redesignate existing paragraph (a) as introductory text, existing paragraph (a)(1) as new paragraph (a), and existing paragraph (a)(2) as new paragraph (b). There are no substantive changes proposed for this section; these are only formatting corrections.

#### F. Repairman (Light-Sport) Certificates

Part 65 provides the requirements for certification of airmen other than flight crewmembers, including certification of a repairman (light-sport aircraft) in subpart E. In addition to meeting the general eligibility requirements (e.g., age, language) set forth by § 65.107(a)(1), an applicant for a repairman certificate (light-sport aircraft) must

complete specified training requirements.<sup>79</sup> These specific training requirements are first dependent on whether an applicant seeks an inspection rating or a maintenance rating (or a combination thereof).<sup>80</sup>

For an inspection rating, a person must complete a 16-hour training course acceptable to the FAA on inspecting the particular class of experimental light-sport aircraft for which the person intends to exercise the privileges of this rating. For a maintenance rating, instructional hours are dependent on the class of aircraft on which the repairman intends to exercise the privileges of the certificate and rating. The specific hours for each class of aircraft are the minimum required to demonstrate a person is sufficiently knowledgeable about the class of aircraft they perform work on. For example, a repairman certificate (light-sport aircraft) with a maintenance rating and airplane class privileges requires 120 hours of instruction in a training course pursuant to § 65.107(a)(3)(ii)(A), whereas a maintenance rating with weight-shift control aircraft class privileges requires 104 hours of instruction pursuant to § 65.107(A)(3)(ii)(B).<sup>81</sup>

The holder of a repairman certificate (light-sport aircraft) with an inspection rating is limited to performing the annual condition inspection on an aircraft that is owned by the holder, that has been issued an experimental certificate for operating light-sport aircraft under § 21.191 and that is in the same class of aircraft for which the holder has completed training. The holder of a repairman certificate (light-sport aircraft) with a maintenance rating is limited to performing or inspecting maintenance on, and approving for return to service, aircraft issued a special airworthiness certificate in the light-sport category under § 21.190, performing the annual condition inspection on aircraft that have

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<sup>79</sup> As discussed in the 2004 final rule, the FAA established training requirements for a repairman (light-sport aircraft) certificate because owners of these aircraft cannot show that the owner manufactured the major portion of the aircraft, unlike a builder of an experimental amateur-built aircraft, and therefore cannot show that the owner would have the skill necessary to inspect and maintain the light-sport aircraft. 69 FR 44848.

<sup>80</sup> A person must meet the eligibility requirements set forth by § 65.107(a)(1) for a repairman certificate (light sport aircraft) before the person is eligible for an inspection rating or maintenance rating pursuant to § 65.107(a)(2)(i) and (3)(i).

<sup>81</sup> Section 65.107(a)(3)(ii) also provides training course instruction hour requirements for powered parachute class privileges, lighter than air class privileges, and glider class privileges.



an experimental certificate for operating light-sport aircraft under § 21.191 and that is in the same class of aircraft for which the holder has completed training.

The repairman certificate identifies the rating (i.e., inspection or maintenance) held and the appropriate privileges/limitations of each rating by class, which are set forth by § 65.107(b) through (d), as applicable. For example, if the applicant meets the eligibility requirements and has completed the applicable training for conducting maintenance on the glider class of light-sport aircraft, the repairman certificate would list “Maintenance – glider” in the privileges and limitations section of the airman certificate. Therefore, that person could only exercise the privileges and limitations set forth by § 65.107(c) and (d) on the glider class of aircraft.

Further, under § 65.107(d), a certificated repairman (light-sport aircraft) with a maintenance rating is not permitted to approve for return to service an aircraft (or any part thereof) unless that person has previously performed the work concerned satisfactorily. If the person has not previously performed such work, then the person may show the ability to do the work by performing it to the satisfaction of the FAA or under direct supervision of certain persons.<sup>82</sup> These requirements (i.e., class specific privileges/limitations and performance history) provide for a repairman who is sufficiently experienced and knowledgeable on the aircraft and the specific work being performed.

#### 1. Revisions to Terminology (“Light-Sport Aircraft” and “Class”)

The FAA is proposing several amendments to terminology to maintain clarity with the subsequently discussed substantive proposals. Currently, the term “light-sport aircraft” is defined in § 1.1; however, because the FAA is proposing to remove the

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<sup>82</sup> These persons include an appropriately rated mechanic, or a certificated repairman, who has previous experience in the operations concerned, as provided in § 65.107(d).

definition of “light-sport aircraft” from § 1.1, as discussed in section IV.B.2, the FAA proposes to remove the term throughout subpart D of part 65.

First, the FAA proposes to change the certificate title from “repairman certificate (light-sport aircraft)” to “repairman certificate (light-sport).” Because future aircraft certificated in the light-sport category will not necessarily conform to the current definition of light-sport aircraft, the FAA seeks to reduce confusion as to the designation of current light-sport aircraft versus future aircraft with a special airworthiness certificate in the light-sport category. Specifically, these repairman certificates would simply be issued as a repairman certificate (light-sport) after the implementation of a final rule.

The FAA notes that, should this proposal be adopted, repairman certificates issued before an effective date specified in the final rule would be valid without additional training or reissuance to account for the broader scope of light-sport category aircraft characteristics. Preserving the privileges of repairman certificates issued before the effective date of the final rule, despite the expansion of aircraft upon which the holder of the certificate may perform work, would not result in a reduction in safety for several reasons. The repairman certificate extends privileges only for the category<sup>83</sup> of aircraft that a person has received training and testing on, regardless of time of issuance. Additionally, the limitations found in current § 65.107(d) are retained in this proposal.<sup>84</sup> Thus, a certificated light-sport repairman with a maintenance rating is, and would continue to be, restricted from approving for return to service any aircraft or part thereof unless the repairman previously performed the work satisfactorily, shows the ability to do the work by performing it to the satisfaction of the FAA or performs the work under direct supervision of certain defined persons. The FAA is not proposing changes to existing privileges or limitations of either rating. The FAA finds the existing

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<sup>83</sup> The term “category” in this instance is used in the context of airman certification as defined in § 1.1. As subsequently discussed, the FAA is proposing to replace the term “class” as used in § 65.107 with “category.”

<sup>84</sup> As subsequently discussed, current § 65.107(d) would relocate to new § 65.109(c) under this proposal.

requirements, as discussed, adequately address the expansion of aircraft that could be inspected or maintained under the current repairman certificate.

Second, the FAA proposes to remove the term “light-sport aircraft” to indicate the category of aircraft a repairman is certificated to work on and, instead, refer only to “aircraft” in these instances. Rather, the regulations would directly cross-reference the appropriate aircraft as provided in part 21 that a repairman (light-sport) could inspect and maintain. For example, proposed § 65.109(a) (which would be a new section as part of a reorganization, as subsequently discussed) would provide the privileges of a repairman certificate (light-sport) with an inspection rating and would set forth the type of aircraft a holder may perform the annual condition inspection on in proposed § 65.109(a)(2).

Third, the FAA proposes to replace references to “class” of aircraft with “category” of aircraft in the proposed amendments to §§ 65.107 and 65.109.<sup>85</sup> Section 1.1 sets forth definitions for category and class. Both terms are defined, first, as used with respect to the certification, ratings, privileges, and limitations of airmen and, second, as used with respect to the certification of aircraft. Under § 65.107, the references to “class” are used in the context of classes of aircraft certification, not airmen certification. For example, § 65.107(a)(3)(ii) sets forth the training course hours of instruction required for airplanes, weight-shift control aircraft, powered parachutes, lighter than air aircraft, and gliders, which are labeled as classes. These aircraft are, in fact, classes under the definition provided in § 1.1 for class as used with respect to aircraft certification.

The FAA has determined using the term “category” in the context of airman certification as defined in § 1.1,<sup>86</sup> is more appropriate because § 65.107 specifically prescribes repairman certification, ratings, privileges, and limitations (i.e., airman

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<sup>85</sup> As subsequently discussed, the FAA proposes to bifurcate § 65.107 into two sections; therefore, proposed § 65.109 is a new section, but contains largely the same information as set forth in current § 65.107(b) through (d).

<sup>86</sup> Section 1.1 defines category, as used with respect to the certification, ratings, privileges, and limitations of airmen, as a broad classification of aircraft. Examples include: airplane; rotorcraft; glider; and lighter-than-air.

certification<sup>87</sup>). Therefore, the FAA is proposing to replace the term “class” in § 65.107 with “category” as follows:

The term “class” as used in current:	...is replaced with “category” as used in proposed:
§ 65.107(a)(2)(ii)	§ 65.107(c)
§ 65.107(a)(3)(ii)	§ 65.107(d)
§ 65.107(b)(3)	§ 65.109(a)(3)
§ 65.107(c)(3)	§ 65.109(b)(3)

Additionally, the existing regulations in § 65.107(a)(2)(ii) and (a)(3)(ii) include the term “particular” as a modifier to “class.” The FAA has received numerous inquiries seeking clarification as to what is meant by “particular” in these instances. Given the FAA’s proposal to replace the term class with the term category, the FAA finds the modifier of “particular” as superfluous, as there is no distinction between a “particular category” and a category. Accordingly, the FAA proposes to remove the term “particular” from this section.

Finally, where existing § 65.107(c)(1)<sup>88</sup> uses the term “approve and return to service” in the context of repairman certificate privileges, the FAA is proposing to revise to “approve for return to service.” Because an aircraft is not in service until it is flown or operated, the holder of a repairman or mechanic certificate cannot “return” the aircraft to service under the privileges of that certificate as flying an aircraft is not a privilege bestowed by any regulation in part 65. The FAA acknowledged the problem with the phrasing and its inconsistency with the language in the part 43 maintenance regulations in a legal interpretation,<sup>89</sup> where the FAA stated that the wording of the phrase could be improved by removing the word “and” and replacing it with “for.” Accordingly, the FAA

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<sup>87</sup> The FAA notes that part 65 designation of category and class aligns with the aircraft category and classes as specified in § 61.5(b)(1).

<sup>88</sup> As subsequently discussed, current § 65.107(c) would relocate to new § 65.109(b) under this proposal.

<sup>89</sup> Legal Interpretation to Wayne A. Forshey (July 9, 2010).

is proposing to revise the language in §§ 65.81(a), 65.85(a) and (b), and 65.87(a) and (b), and proposed § 65.109(b) (currently housed in § 65.107(c)(1); the relocation of this regulation is subsequently explained) to more accurately capture the intended privileges of the certificate. Additionally, the FAA proposes to revise certain gender references within those regulations.

## 2. Light-Sport Repairman Training Courses

As previously discussed, a person must meet certain eligibility requirements set forth by § 65.107 to obtain a repairman (light-sport aircraft) certificate. Specifically, § 65.107 sets forth a table establishing the general applicability requirements, as well as the specific requirements to obtain an inspection rating and a maintenance rating. After two decades of implementation and receiving stakeholder feedback, the FAA recognizes that the section is difficult to navigate. Therefore, the FAA proposes to reorganize the table into paragraphs, which the FAA believes will improve readability and understanding of the requirements.

Specifically, proposed § 65.107 would set forth only the eligibility and training course requirements, while new proposed § 65.109 would set forth the privileges and limitations. Within § 65.107, proposed paragraph (a) would provide the ratings that may be issued on a repairman certificate (light-sport);<sup>90</sup> proposed paragraph (b) would set forth the general requirements for a repairman certificate (light-sport); proposed paragraph (c) would set forth the training course requirement for an inspection rating; proposed paragraph (d) would set forth the training course requirement for a maintenance rating, and proposed paragraph (e) would set forth certain parameters that training course providers are expected to meet. Within new § 65.109, proposed paragraph (a) would set forth the privileges and limitations of an inspection rating, proposed paragraph (b) would

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<sup>90</sup> This paragraph is new to explicitly state the ratings that the FAA may issue on a repairman (light-sport) certificate. Current § 65.107 only implies that the FAA may issue these ratings.

set forth the privileges and limitations of a maintenance rating, and proposed paragraph (c) would set forth additional limitations for repairman certificate (light-sport). Table 2 is provided for clarity.

**Table 2**

Current regulation:	Contains the requirements for:	Reorganized in proposed:
§ 65.107(a)(2) and (3)	Ratings	§ 65.107(a)
N/A	General eligibility requirements, including a requirement for a test	§ 65.107(b) <sup>91</sup>
§ 65.107(a)(2)	Inspection rating training requirements	§ 65.107(c)
§ 65.107(a)(3)	Maintenance rating training requirements	§ 65.107(d)
new	Training course providers	§ 65.107(e)
§ 65.107(b)	Inspection rating privileges and limitations	§ 65.109(a)
§ 65.107(c)	Maintenance rating privileges and limitations	§ 65.109(b)
§ 65.107(d)	Additional limitations for repairman (light-sport) certificate holders	§ 65.109(c)

<sup>91</sup> The FAA notes a minor change in the proposed regulatory text pertaining to the eligibility requirement to read, speak, write, and understand English for a repairman certificate (light-sport). Currently, § 65.107(a)(1)(ii) states that if a person is prevented from reading, speaking, writing, or understanding English due to a medical reason, the FAA may place a limitation on the repairman certificate, as necessary, to ensure safe performance of the actions authorized by the certificate and rating. However, in practice, the FAA issues an exemption to the repairman applicant in conjunction with the application (on FAA Form 8610-3) and temporary airman certificate (FAA Form 8060-4). The temporary certificate (and subsequent permanent certificate) would then list the conditions and limitations from the requirement to read, speak, write, and/or understand English (as applicable) as granted under the part 11 exemption. This practice is in alignment with the treatment of all other persons certificated under part 65 who have an identified obstacle to meeting the English requirements. Therefore, the FAA is removing the limitation direction as superfluous in proposed § 65.107(b)(2).

### 3. Training Course Content for Maintenance Rating & Incorporation by Reference

#### (1 CFR part 51)

As discussed, current § 65.107 sets out the training requirements for a repairman certificate (light-sport aircraft) for maintenance and inspection ratings. Currently, the requirements set forth training course instruction hours for these ratings (i.e., a 16-hour training course under § 65.107(a)(2) for an inspection rating and/or varied hours of instruction under § 65.107(a)(3) for a maintenance rating, which as noted depend on the aircraft class for the privileges sought). In the 2004 final rule, the FAA declined to align the curriculum content for a repairman certificate (light-sport aircraft) with a maintenance rating with the training and curriculum subjects for maintenance in part 147 (aviation maintenance technician schools), which were located in then-appendices B, C, and D, because many of the technical subjects set forth at that time were not relevant to light-sport aircraft.<sup>92</sup> Therefore, the FAA implemented varied training hour requirements dependent on the class of aircraft after finding that differing training hours were required to address distinct knowledge elements between classes.<sup>93</sup> The FAA no longer believes this is the best approach for maintenance training courses for repairman (light-sport) and proposes the revisions described in this section, which would require repairman to have the appropriate knowledge and skills to maintain light-sport category aircraft and subsequently demonstrate the requisite skill to determine whether the aircraft is in a condition for safe operations. The FAA does not propose changes, however, to the inspection training course requirements.

Since the 2004 final rule, the FAA has published the Aviation Mechanic General, Airframe, and Powerplant ACS (Mechanic ACS). The Mechanic ACS is required as the training curriculum for aviation maintenance technician schools certificated under part

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<sup>92</sup> 69 FR 44849.

<sup>93</sup> *Id.* Distinct knowledge elements between classes could include part 39 and part 43 requirements; type-certificated engines, floats, and composite structures; and two- and four-cycle engines and electrical systems.

147<sup>94</sup> and as the testing standard (as of the implementation date of August 1, 2023) for all mechanic certificates issued under part 65.<sup>95</sup> An ACS is a comprehensive presentation that integrates standards for what an applicant must know, consider, and do to demonstrate proficiency to pass the tests required for the issuance of a certificate or rating. The Mechanic ACS includes high-level subjects (e.g., Fundamentals of Electricity and Electronics, Flight Controls, Engine Inspection), which are broken down into components that include knowledge, risk management, and skill elements relevant to that subject.

Notwithstanding that a repairman is limited in the scope of their privileges to performing maintenance and inspection on light-sport category aircraft, former light-sport category aircraft and light-sport kit-built aircraft, as well as being limited to the aircraft category on which they have received the requisite training, a repairman nevertheless performs the same type of work as a mechanic. As such, it is reasonable to expect a repairman to demonstrate similar knowledge and skills as mechanics (limited in scope applicable to the aircraft category they will work on). The FAA proposes that the Mechanic ACS would most efficiently and effectively set forth the important knowledge and skill elements that should be included in a training course for a maintenance rating on a repairman certificate (light-sport). In other words, using the Mechanic ACS as a standard for repairman training, but limited in scope as appropriate to the category of aircraft for which the repairman intends to exercise the privileges of the certificate, provides a flexible and performance-based standard for repairman training.

For these reasons, the FAA is proposing to replace the currently specified aircraft class and training hour requirements for a maintenance rating with a performance-based standard for repairman (light-sport) training that will support existing and future

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<sup>94</sup> 14 CFR 147.17.

<sup>95</sup> 14 CFR 65.75(a) and 65.79(b).



categories of aircraft. As such, the FAA is proposing to require training courses to, at a minimum, include the knowledge, risk management, and skill elements for each subject contained in the Mechanic ACS, as appropriate to the category of aircraft being taught. Additionally, the FAA is removing the hours requirement for a maintenance rating training course in each category of aircraft. Similar to the training curriculum for part 147 certificated aviation maintenance technician schools, the Mechanic ACS provides a comprehensive set of standards such that allows a training course provider to offer a training timeline that is best suited to that particular training course and that category of aircraft, while requiring that the applicant receives training on all important subject areas to maintain safety.<sup>96</sup> Therefore, proposed § 65.107(d) requires a person seeking a maintenance rating to complete a training course accepted by the Administrator that includes the knowledge, risk management, and skill elements for each subject contained in the Mechanic ACS appropriate to the category of aircraft for which the person intends to exercise the privileges of the rating (in addition to meeting the general eligibility requirements in proposed § 65.107(a), which are largely unchanged from the current requirements of § 65.107(a)(1)).<sup>97</sup>

In 2022, the Mechanic ACS was incorporated by reference<sup>98</sup> into part 65 as the testing standard for issuance of a mechanic certificate under part 65, subpart D.<sup>99</sup> As a result of the proposal to use the Mechanic ACS as a standard under proposed § 65.107(d), the FAA proposes to amend § 65.23(a)(2) to add § 65.107 in the referenced regulations for which the incorporation by reference of the Mechanic ACS applies. In accordance

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<sup>96</sup> The FAA believes the hours of training maintenance rating course providers are required to design their courses to under the existing regulations would be similar to the hours training course providers would include in new/revised courses meeting the proposal because those courses should already be teaching students the required information on how to maintain their class of aircraft. However, the level of detail offered by each course provider could add or remove hours from the course.

<sup>97</sup> The changes to § 65.107(a) are described in section V.F.2.

<sup>98</sup> Incorporation by reference is a mechanism that allows Federal agencies to comply with the requirements of the Administrative Procedure Act (APA) to publish rules in the *Federal Register* and the Code of Federal Regulations by referring to material published elsewhere. Material that is incorporated by reference has the same legal status as if it were published in full in the *Federal Register*. Because 5 U.S.C. 552(a) requires the Director of the *Federal Register* to approve material to be incorporated by reference, incorporation by reference is governed by the Office of the *Federal Register* and as promulgated in its regulations: 1 CFR part 51. Specifically, 1 CFR part 51 provides certain requirements that a regulatory incorporation by reference must contain.

<sup>99</sup> Aviation Maintenance Technician Schools, Interim Final Rule, 87 FR 31391 (May 24, 2022).

with 5 U.S.C. 552(a) and 1 CFR part 51,<sup>100</sup> the FAA makes the Mechanic ACS reasonably available to interested parties by providing free online public access to view on the FAA ACS website at: [faa.gov/training\\_testing/testing/acs](http://faa.gov/training_testing/testing/acs). Additionally, the Mechanic ACS is available for download, free of charge, at the provided web address.

The FAA notes that it is not proposing any revisions to the current training course content for an inspection rating. Applicants for a repairman certificate (light-sport) with an inspection rating must complete a 16-hour training course acceptable to the FAA on inspecting the particular class of aircraft for which the applicant intends to exercise the privileges of the inspection rating pursuant to current § 65.107(a)(2)(ii), which is proposed § 65.107(c) in the reorganization. As discussed in the original implementation of the inspection rating training course, the 16-hour course is designed to train an individual owner with no background in aviation maintenance or inspection to perform a satisfactory annual condition inspection on their experimental light-sport aircraft and, based on that inspection, make a determination if that aircraft is safe to fly. Given this limited scope of privileges of the inspection rating (i.e., annual condition inspections only) compared to the broad scope of privileges of a maintenance rating (i.e., all inspections and maintenance), the FAA is not proposing any changes to this requirement relative to training course content.

As a result of the proposed change to training course standards for the maintenance rating, existing course providers would need to review their existing training courses to determine if those courses include the appropriate knowledge, risk management, and skill elements from the Mechanic ACS. If revision is necessary, the course provider would have to submit the revised course to the FAA for acceptance. To allow for a transition period between the current and proposed training standards, the

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<sup>100</sup> Section 552(a) of title 5, United States Code, requires that matter incorporated by reference be “reasonably available” as a condition of its eligibility. Further, 1 CFR 51.5(b)(2) requires that agencies seeking to incorporate material by reference discuss in the preamble of the final rule, the ways that the material it incorporates by reference are reasonably available to interested parties, and how interested parties can obtain the material.

FAA would delay the compliance requirement for having a training course containing the knowledge, risk management, and skill elements of the Mechanic ACS. The FAA will allow for a 6-month compliance timeframe, as evidenced in proposed § 65.107(d)(1). During that time period, both an hours-based training course (developed under current regulations) or an ACS-based training course (developed under the proposed regulations) may be accepted by the FAA for issuance of the maintenance rating on a repairman certificate (light-sport). However, an applicant for a repairman certificate (light-sport) with a maintenance rating who seeks privileges for one of the new categories of aircraft (i.e., rotorcraft or powered-lift), would only be eligible for the certificate if the training was an ACS-based training course, since hours-based training courses developed under current regulations do not address these aircraft categories.

The FAA notes that the agency will continue its current practice of accepting these training courses, providing an acceptance letter to the course provider, and maintaining a web-based computer database record on all accepted training providers available to both industry and FAA personnel.<sup>101</sup> However, the FAA currently issues course acceptance with a 24-month expiration. Current practice mandates that the FAA will notify a training course provider 60 days before the end of the acceptance period, at which time the training provider must reapply for continuing authority to provide the training. Because these training courses will now be aligned with the ACS, the FAA does not see a need to limit the course acceptance timeframe for light-sport repairman inspection or maintenance rating training courses to reexamine a training course provider's training course content. Therefore, a training course that is found acceptable to the FAA will no longer require a 24-month re-application process and will continue to be acceptable, until such time as it is found to be not acceptable (see section IV.F.5 for further discussion on acceptability).

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<sup>101</sup> FAA Order 8000.84B.

#### 4. Training Course Exams

In 2004, the NTSB commented on the FAA's proposal pertaining to the training required of repairman (light-sport aircraft) applicants and suggested that the FAA implement a testing requirement.<sup>102</sup> Currently, training providers issue a written exam to students, successful completion of which is measured at 80%. However, neither the examination nor the 80% passing standard are codified within the regulation. In alignment with the NTSB, the FAA continues to believe that a test is an important step within the airman certification process; specifically, the written exam serves as a benchmark to determine if an applicant possesses the appropriate knowledge to obtain the privileges of a repairman certificate. In other words, the FAA finds that a written test establishes the requisite level of safety required of a certificated repairman today. As such, the FAA is proposing to add a requirement in proposed § 65.107(b), which is the new section for the general eligibility requirements, to require an applicant for an inspection or maintenance rating to pass a written exam administered by the training course provider that covers the content of the training course. Rather than memorializing an 80% pass rate as dictated by FAA policy, the minimum passing grade requirement (70 percent) that applies to all part 65 tests in § 65.17(b) would apply to § 65.107(b).

#### 5. Basis for Training Course Acceptance

Pursuant to § 65.107(a)(2)(ii) and (a)(3)(iii), a training course must be acceptable to the FAA. When the FAA implemented these training courses, the 2004 final rule indicated that the FAA would look at five areas in the determination of acceptability. These areas included: passing grade, adherence to training guidance in FAA advisory material, the provider's training course outline, and the final written test. Additionally, the FAA referenced the appendices, curriculum subjects, and level 3 training standard, as

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<sup>102</sup> 69 FR 44848. As discussed in the 2004 final rule, the FAA stated that a training course should contain a written test that the applicant should pass with a minimum score of 80%.

defined in part 147 at that time.<sup>103</sup> The FAA developed guidance materials that direct a prospective training course provider to submit specified information such as information regarding the provider, the course outline, a description of training aids used in the course, handbooks, sample certificates of completion, course tests, a description of the instructors qualifications, a schedule of where and when training will be provided, and a description of the facilities if the course is provided at a fixed location. However, these desired components are not situated in the regulations.

The FAA believes it is crucial to set minimum standards for training course providers to provide quality training for those persons seeking a repairman certificate (light-sport) with associated ratings. FAA Advisory Circular 65-32A provides guidance to stakeholders on the acceptability of a training course, among other topics related to the certification of repairman (light-sport aircraft). The FAA proposes to codify provisions in AC 65-32A to add a requirement in new § 65.107(e) that requires the training course provider to deliver the course (1) using facilities, equipment, and materials appropriate to the training course content being taught and (2) by instructors who are appropriately qualified to teach the course content. The FAA interprets “appropriate” facilities, equipment, and materials to mean those elements are sufficiently suited to instruct in the curriculum the training course offered.<sup>104</sup> Similarly, the FAA interprets “appropriately qualified” to mean an instructor is demonstrably qualified to teach the course content. This demonstration may include educational credentials, certifications, or practical experience that aligns with the subject matter that the instructor teaches.

For either an inspection or maintenance rating, the training course which must be completed to obtain a repairman certificate (light-sport) must be found acceptable to the

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<sup>103</sup> 69 FR 44849.

<sup>104</sup> To illustrate, if the training course includes a skill requirement that an applicant must perform on a specific piece of equipment (as listed in the Mechanic ACS), the course provider must have that piece of equipment (*e.g.*, where the course requires a student to be able to perform a skill requirement to service a battery, the course provider must have an aircraft battery in a condition that will allow a student to demonstrate the appropriate servicing requirements to be considered to have equipment appropriate to the training course content being sought).

FAA, including evaluation of these elements. Because the FAA uses these training courses as the basis for issuance of a repairman certificate, the FAA has determined each course must be reviewed and accepted by the FAA to facilitate issuance of repairman certificates by individual aviation safety inspectors. AC 65-32A provides information on how to submit training course materials to the FAA for acceptance. The FAA maintains a list of accepted courses that it makes available to the public. FAA personnel who issue repairman certificates use this this list to verify an applicant for a repairman certificate (light-sport aircraft) has attended a training course found acceptable to the FAA.

Additionally, while one eligibility element for a repairman certificate (light-sport) is that a person complete a training course, the current regulatory text lacks the explicit steps between completing the training and receiving the certificate. Therefore, the FAA proposes two clarifying amendments. First, proposed § 65.107(c) and (d), which set forth the eligibility requirements, would require an applicant to successfully complete a training program and demonstrate completion of the training program. This demonstration is most logically done through a certificate of completion issued by the training provider.<sup>105</sup> Therefore, the FAA proposes to require in § 61.107(e) that training course providers issue each student a certificate of completion after the student has completed the training and passed the test. This documentation will ensure that an applicant has the means to demonstrate to the FAA that they have met the requirements for the certificate or rating. The training provider would be required to issue a certificate of completion that includes, at least, the name of the training provider, the FAA course acceptance number, the rating applicable to the training course (i.e., inspection rating or maintenance rating), the category of aircraft the training was based on, and the date of completion of the training.

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<sup>105</sup> The FAA notes that the regulatory text would not limit acceptable demonstration of completion to *only* a certificate of completion. While the FAA prefers an applicant to present a certificate of completion to demonstrate completion of the training program, the FAA intends to permit flexibility by accepting other documentary evidence without having to seek an exemption (e.g., in a case where a person has lost their certificate).

On November 28, 2017, the FAA published Notice N8900.444, “Meaning of the Terms ‘Acceptable to’ and ‘Accepted by’ for Use by Aviation Safety Inspectors,” to explain how each of the terms are used, which has since been incorporated into FAA Order 8900.1.<sup>106</sup> Where the term “accepted by the FAA” is used, it means the item at issue must be submitted to the FAA for review and acceptance before use. Where the term “acceptable to the FAA” is used, it means the item is not normally privy to the FAA’s active review and acceptance before its use, although the FAA will exercise its oversight responsibilities. While the current regulation requires the training course to be “acceptable to” the FAA, the FAA finds that in practice these training courses are instead “accepted by” the FAA through the previously discussed process. As such, the FAA proposes to change the term “acceptable to” to “accepted by” in proposed § 65.107(c) for inspection rating training courses and § 65.107(d) for maintenance rating training courses. The FAA notes that should a training course change, it would no longer be considered to be accepted by the FAA and, therefore, the training course provider would be required to resubmit the training course for acceptance by the FAA.

#### 6. Repairman Certificate (Light-Sport) for Rotorcraft

Under current regulations the FAA may issue a repairman certificate (light-sport aircraft) with an inspection rating for aircraft in the gyroplane class; however, the FAA does not currently issue a maintenance rating applicable to gyroplanes. In the 2004 final rule, gyroplanes were included in the light-sport aircraft definition to permit a sport pilot to fly the small gyroplanes that were then available on the market. At the time, the FAA did not intend to certificate gyroplanes under § 21.190.<sup>107</sup> Because the primary purpose of the maintenance rating is to perform maintenance on aircraft certificated in accordance with § 21.190, the FAA concluded it would be unnecessary to issue a maintenance rating

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<sup>106</sup> FAA Order 8900.1, Volume 3, Chapter 1, Section 1.

<sup>107</sup> 69 FR 44799.

with gyroplane privileges. As a result, there are no gyroplane training course instruction hours requirements in § 65.107(a)(3)(ii). In effect, this means that, currently, it is not possible to attain a maintenance rating with gyroplane class privileges on a repairman certificate (light-sport aircraft). The FAA currently only issues the inspection rating with a gyroplane privilege/limitation, specific to aircraft owned by the applicant/holder of the repairman (light-sport aircraft) certificate.

The proposals in this rulemaking to expand aircraft certificated under § 21.190 to rotorcraft and powered-lift would facilitate the possibility to obtain a light-sport repairman certificate in the rotorcraft category and powered-lift category, which are not currently available pursuant to the existing definition of light-sport aircraft in § 1.1. Under this proposal, the new rotorcraft category encompasses both gyroplanes and helicopters. Because the FAA proposes to expand the aircraft certification parameters for a light-sport category aircraft, the FAA recognizes that both the gyroplane and helicopter would be able to enter the light-sport market in greater numbers,<sup>108</sup> and there would be a corresponding demand for the ability to safely maintain and inspect these aircraft. Therefore, the FAA proposes to permit the issuance of maintenance ratings to the rotorcraft category (i.e., gyroplane and helicopter classes).

The FAA has determined that a rotorcraft category training course is sufficient, rather than establishing mutually exclusive helicopter and gyroplane courses. From a maintenance perspective, there is not a substantial difference in systems on gyroplanes and helicopters. For example, both gyroplanes and helicopters utilize an aircraft engine and main rotor system which, from a maintenance perspective, are of similar design and operation. Although there are other differences in operation and in design, such as use of a tail rotor or propeller, the FAA believes these differences can be covered in a single

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<sup>108</sup> Refer to preamble section IV.C. for discussion on the expansion of eligibility requirements (proposed § 22.100) providing for the certification of additional classes of aircraft.



training course that includes both types of aircraft. Additionally, because these training courses require FAA acceptance, the FAA would verify in its review process that the training includes the class-specific differences within the rotorcraft category. Therefore, all persons seeking repairman certificates (light-sport) with a maintenance rating for rotorcraft category privileges (i.e., gyroplane or helicopter) would be trained on both classes within the category.

Additionally, given the proposed change, as subsequently discussed, to differentiate between categories of light-sport category aircraft, the FAA proposes to permit the issuance of inspection ratings to the rotorcraft category (i.e., gyroplane, which could already be issued, and helicopter). The FAA has determined existing holders of a gyroplane inspection rating would already have the knowledge and skills for performing the annual condition inspection on aircraft in the rotorcraft category due to the aforementioned similarities and limited scope of privileges with the inspection rating. The FAA notes that current holders of a repairman certificate (light-sport aircraft) with an inspection rating with gyroplane class privileges would not need to be reissued a certificate. However, if the airman requested either a replacement certificate, or additional aircraft category privileges for the same certificate, the FAA would amend the “gyroplane” class privilege to a “rotorcraft” category privilege at the time the permanent certificate is issued.

#### 7. Inspection Ratings Privileges and Limitations

Existing § 65.107(b)(2) establishes the privileges for repairman certificates (light-sport aircraft) with an inspection rating. Specifically, under § 65.107(b)(2), a person may perform the annual condition inspection if the aircraft has been issued an experimental certificate under § 21.191(i), with certain conditions.<sup>109</sup> Should this proposal be adopted

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<sup>109</sup> The aircraft must also be owned by the holder and must be in the same class of light-sport aircraft for which the holder completed the requisite training.

as a final rule, the FAA finds that the language in § 65.107(b)(2) could result in a situation where an individual was issued a repairman certificate (light-sport aircraft) with an inspection rating specific for a former light-sport category aircraft (experimental purpose under proposed § 21.191(i)), and the aircraft could later be re-certificated as a light-sport category aircraft (special airworthiness certificate under § 21.190). In this scenario, if the aircraft was later re-certificated in accordance with § 21.190, that repairman's certificate, which states the aircraft N-number and serial number could allow the repairman to continue to conduct the annual condition inspection on that aircraft. The FAA did not intend to allow for repairman with an inspection rating to conduct an annual condition inspection on aircraft certificated under § 21.190.

Therefore, the FAA proposes to remove the phrase "been issued" to clarify that to perform the annual condition inspection on an aircraft it must currently have an experimental certificate for the certain operating purposes, as set forth in § 65.109(a)(2) (pursuant to the proposed reorganization of §§ 65.107 and 65.109, as previously discussed). This change would require that to exercise the privileges of the repairman certificate (light-sport) inspection rating, the aircraft must have the appropriate experimental certificate.

#### 8. Duration of Repairman Certificates

Section 65.15 prescribes the duration of effectivity of certificates issued under part 65. Specifically, pursuant to § 65.15(a), a certificate or rating under part 65 is effective until surrendered, suspended, or revoked, but excludes repairman certificates from these duration parameters. Section 65.15(b) provides the duration for repairman certificates, which includes those issued in accordance with §§ 65.101, 65.104, and 65.107. Those certificates are effective, unless sooner surrendered, suspended, or revoked, until the holder is relieved from the duties for which the holder was employed and certificated.

Employment is a requirement specific to repairman certificates issued in accordance with § 65.101. Specifically, § 65.101(a) requires an applicant be employed for a specific job, and § 65.103(a) limits a repairman to conducting work only in connection with duties for the certificate holder by whom the repairman was employed and recommended. Different durations apply to certificates issued under § 65.104, repairman certificates (experimental aircraft builder), and under § 65.107, repairman certificates (light-sport aircraft). Section 65.101(b) excepts those certificates from the general eligibility requirements of § 65.101, which includes the employment requirement. In other words, there is no employment requirement for those certificates. Therefore, § 65.15(b) cannot be applied with respect to the aforementioned repairman certificates because eligibility, privileges, and limitations of these two types of repairman certificate do not have any association with an employer.

The FAA proposes to revise § 65.15(a) and (b) to distinguish the effective period of repairman certificates issued under § 65.101 from that of certificates issued under §§ 65.104 and 65.107. Specifically, proposed § 65.15(a) would except only those repairman certificates issued in accordance with § 65.101 from the stated duration. In other words, repairman certificates issued in accordance with §§ 65.104 and 65.107 would be effective until the certificate is surrendered, suspended, or revoked. Additionally, § 65.15(b) would specify the duration of repairman certificates issued in accordance with § 65.101 to be the effective until the repairman is relieved from the duties for which the repairman was employed and certificated (unless the certificate is sooner surrendered, suspended, or revoked).

The FAA also proposes to remove the reference to March 31, 2013, in § 65.15. That date referenced a compliance date that has since passed and, as such, is no longer necessary. In July 2003, the FAA discontinued issuing paper airman certificates and began issuing counterfeit-resistant plastic permanent airman certificates. In 2008, the

FAA issued a final rule that restricted airmen other than flight crewmembers (regulated under 14 CFR part 65) from exercising the privileges of a paper certificate five years from the effective date of the final rule.<sup>110</sup> After the five-year period (i.e., March 31, 2013), only an FAA-issued plastic airmen certificate could be used to exercise these privileges. Since March 31, 2013, has passed, the FAA is removing this grace period from the regulations as superfluous. Therefore, except for temporary certificates issued under § 65.13, the holder of a paper certificate issued under part 65 may not exercise the privileges of that certificate. Removing the March 31, 2013, date from the regulation simplifies the regulation and removes a date that no longer has significance; in other words, this is a non-substantive revision in nature with no practical repercussions.

#### 9. Repairman Certificate: Privileges and Limitations

Section 65.103 provides the privileges and limitations for a repairman certificate issued under § 65.101. Currently, § 65.103(c) excepts holders of a repairman certificate (light-sport aircraft) from this requirement while that repairman is performing work under that certificate. Section 65.103(a) provides certificate privileges appropriate to the job for which the repairman was employed and certificated, limiting that repairman to duties only in connection with the certificate holder who employed and recommended the repairman. Section 65.103(b) further limits the repairman to only performing or supervising duties for which the repairman understands the current instructions of the certificate holder by whom the repairman is employed. This language indicates that paragraphs (a) and (b) are only applicable to repairman certificates issued in accordance with § 65.101, which is the only repairman certificate type that has requirements relating to employment.<sup>111</sup> However, the FAA notes that § 65.103 also does not apply to a repairman certificate issued in accordance with § 65.104 (experimental aircraft builder

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<sup>110</sup> Drug Enforcement Assistance, Final Rule, 73 FR 10662, (Feb. 28, 2008).

<sup>111</sup> See § 65.101(a)(2).

repairman). Accordingly, the FAA is proposing to amend § 65.103(c) to state that § 65.103 does not apply to the holder of a repairman certificate issued in accordance with either § 65.104 (experimental aircraft builder) or § 65.107 (light-sport).

#### G. Maintenance

Currently, light-sport aircraft are subject to the maintenance requirements of § 91.327. This rule would revise the maintenance requirements for light-sport category aircraft in § 91.327 regarding safety directives and major and minor repairs and alterations, as described in the subsequently discussed proposals. Additionally, the FAA is proposing conforming changes to §§ 91.417, 65.85, and 65.87.

##### 1. Safety Directives

Section 91.327(b)(4) states no person may operate an aircraft that has a special airworthiness certificate in the light-sport category unless the owner or operator complies with each safety directive applicable to the aircraft that corrects an existing safety-of-flight condition. The FAA considers that a separate regulatory requirement to comply with safety directives issued by the aircraft manufacturer is unnecessary, therefore the FAA proposes to remove this requirement. The FAA expects that manufacturers would still issue safety directives when necessary to correct a safety-of-flight condition because the applicable FAA-accepted consensus standards would continue to direct the aircraft manufacturer to issue safety directives to correct safety-of-flight conditions. Additionally, § 91.7 prohibits any person from operating a civil aircraft unless it is in an airworthy condition.<sup>112</sup> The FAA considers that where a manufacturer has issued a safety directive to correct a safety-of-flight condition, the condition would need to be corrected before the aircraft could be considered in airworthy

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<sup>112</sup> For example, see F3198-18 - Standard Specification for Light Sport Aircraft Manufacturer's Continued Operational Safety (COS) Program and F2483-18e1 Standard Practice for Maintenance and the Development of Maintenance Manuals for Light Sport Aircraft and F2483-18e1 - Standard Practice for Maintenance and the Development of Maintenance Manuals for Light Sport Aircraft.

condition. Similarly, if there is a safety-of-flight condition that has not been corrected, the aircraft cannot pass its annual condition inspection required by § 91.327(b)(2).

Because this proposal removes § 91.327(b)(4) requiring compliance with safety directives, the FAA is proposing to remove the corresponding record keeping requirement for safety directives in § 91.417(a)(2)(v). Current § 91.417 specifies the records that must be kept by each registered owner or operator of an aircraft. Specifically, § 91.417(a)(2)(v) requires that records contain the current status of applicable safety directives, including, for each, the method of compliance, the safety directive number and revision date. If the safety directive involves recurring action, the record must also state the time and date when the next action is required. The safety directive record keeping requirement in § 91.417(a)(2)(v) exists because § 91.327(b)(4) currently requires owners and operators to comply with safety directives. Therefore, the FAA proposes to remove the record-keeping requirement to maintain records of safety directives. The FAA considers that a regulatory requirement under § 91.417 to document safety directives is unnecessary because maintenance performed on aircraft under § 43.9 or § 43.11 would still have record-keeping requirements.

## 2. Minor Repairs and Minor Alterations

Section 91.327(b)(5) currently requires that each alteration accomplished after the aircraft's date of manufacture meets the applicable and current consensus standard and has been authorized by either the manufacturer or a person acceptable to the FAA.<sup>113</sup> The FAA has determined that the language in § 91.327(b)(5) does not allow for a certificated repairman (light-sport), an appropriately-rated mechanic, or an appropriately-rated part 145 certificated repair station to perform minor alterations as otherwise

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<sup>113</sup> 69 FR 44854. As discussed in the 2004 final rule, the FAA stated, for the purpose of § 91.327, "a person acceptable to the FAA" includes: (1) the manufacturer that issued the statement of compliance, (2) any person who has assumed, and is properly exercising, the original manufacturer's responsibility for carrying out the continued airworthiness procedures described in the consensus standard, (3) The holder of an FAA-approved technical standard order (TSO) authorization, parts manufacturer approval (PMA), type certificate (TC), or supplemental type certificate (STC) for a product or part installed on the aircraft, and (4) Any person authorized by the manufacturer to produce modification or replacement parts in accordance with the applicable consensus standard addressing "qualification of third-party modification or replacement parts."

permitted in § 91.327(b)(1) without the authorization of the manufacturer or person acceptable to the FAA. Certificated persons who are already authorized under § 91.327(b)(1) and part 43 to perform minor alterations, may be prevented from doing so because of the language in § 91.327(b)(5).

The FAA proposes to revise § 91.327(b)(5) to require that minor repairs and minor alterations meet the applicable design and performance requirements, and allow the persons listed in § 91.327(b)(1) to perform minor repairs and minor alterations without obtaining authorization from the manufacturer or a person acceptable to the FAA.

This proposed change is consistent with part 43 governing minor repairs or minor alterations. For example, 14 CFR part 43 prescribes rules governing the maintenance, preventive maintenance, rebuilding, and alterations performed on aircraft and is applicable to any light-sport category aircraft. Under this proposal, minor repairs and minor alterations would not require specific authorization of the manufacturer or other person acceptable to the FAA, but rather must meet the performance requirements of part 43, including § 43.13. Additionally, since minor repairs and minor alterations must already be performed in accordance with the § 91.327(b)(1) requirement to use maintenance and inspection procedures developed by the aircraft manufacturer or a person acceptable to the FAA, the FAA considers it unnecessary to require additional authorization before minor repairs or minor alterations can be performed. Finally, this proposal provides some relief to aircraft owners and operators because they would not have to receive authorization from the aircraft manufacturer, or another person acceptable to the FAA to perform a minor repair or minor alteration.

The proposed § 91.327(b)(5) would also require that each minor repair and minor alteration meet the applicable consensus standards specified in the statement of compliance submitted to the FAA for the aircraft. Part 43 prescribes performance rules

for these aircraft. Specifically, § 43.13(b) requires work to be performed in such a manner and use materials of such a quality, that the condition of the aircraft, airframe, aircraft engine, propeller, or appliance worked on will be at least equal to its original or properly altered condition (regarding aerodynamic function, structural strength, resistance to vibration and deterioration, and other qualities affecting airworthiness). Requiring the aircraft meet the applicable and current consensus standards listed on the aircraft's statement of compliance after either a minor repair or a minor alteration would be consistent with § 43.13(b). Finally, the FAA proposes that § 91.327(b)(5) would no longer contain language concerning alterations being "accomplished after the aircraft's date of manufacture." By definition, an aircraft could only be operated after it has been manufactured. As such, including the phrase "accomplished after the aircraft's date of manufacture" is not necessary and could unintentionally cause confusion.

The FAA notes that this rule also proposes two changes to § 43.13. First, the FAA proposes to eliminate the use of gender-specific terminology that exists in § 43.13(a). Second, the FAA proposes to remove the paragraph heading that exists in current § 43.13(c) to ensure consistency with § 43.13(a) and (b), which do not use headings. The FAA also proposes minor editorial changes to § 43.13(c). These proposed changes would not alter the substantive requirements that are contained in § 43.13.

### 3. Major Repairs and Major Alterations

Section 91.327(b)(6) currently requires that each major alteration to an aircraft product produced under a consensus standard is authorized, performed and inspected in accordance with maintenance and inspection procedures developed by the manufacturer or a person acceptable to the FAA. The FAA is proposing to revise this section by adding the term "major repair," removing the statement "to an aircraft produced under a consensus standard," and adding language to clarify that the required authorization to



perform a major repair or major alteration must be provided by the manufacturer or a person acceptable to the FAA.

The proposed § 91.327(b)(6) text will require that each major repair or major alteration is authorized by the manufacturer or a person acceptable to the FAA. It will retain the existing requirement that each major alteration be performed and inspected in accordance with maintenance and inspection procedures developed by the manufacturer or a person acceptable to the FAA. The proposal will add that same requirement to major repairs. The following discussion explains these changes in more detail.

First, § 91.327(b)(6) establishes requirements for major alterations but is silent on major repairs. The FAA is proposing to add “major repairs” to this provision to require major repairs also be authorized by the manufacturer or a person acceptable to the FAA. The proposed rule would also require that major repairs be performed and inspected in accordance with maintenance and inspection procedures developed by the manufacturer or a person acceptable to the FAA. The proposal is consistent with how major repairs are applied to type-certificated aircraft with one difference. Although a major repair on a type-certificated aircraft must be done in accordance with technical data approved by the Administrator (§ 65.95(a)(1)), such Administrator approved data does not exist for a light-sport category aircraft and so a major repair on a light-sport category aircraft built to a consensus standard that meets the requirements of part 22 should be done only after authorization from the manufacturer. Therefore, the proposal requires the major repair must be authorized by the manufacturer and performed and inspected in accordance with maintenance and inspection procedures developed by the manufacturer, or a person acceptable to the FAA. Additionally, related provisions in part 65, specifically §§ 65.85 and 65.87, reference both major alterations and major repairs.

Second, the FAA proposes to remove the language “to any aircraft produced under a consensus standard” from § 91.327(b)(6) as unnecessary. Section 91.327 applies

to the operating requirements of aircraft that have a special airworthiness certificate in the light-sport category. Separately, pursuant to proposed § 21.190(d)(6) manufacturers must state that these aircraft are built to a consensus standard. Therefore, reading § 91.327(b)(6) and the proposed § 21.190 together, it is clear that aircraft in the light-sport category must be built to a consensus standard. As a result, the language referencing consensus standards is unnecessary because all aircraft subject to § 91.327(b)(6) would have to be produced under a consensus standard. Therefore, the FAA proposes to remove this language from § 91.327(b)(6).

Third, regarding the manufacturer authorizing major alterations, the FAA finds that current language could be clearer. Read strictly, the current § 91.327(b)(6) requires that each major alteration to an aircraft is authorized in accordance with maintenance and inspection procedures developed by the manufacturer or a person acceptable to the FAA. However, such a reading points to authorizations being in accordance with maintenance and inspection procedures. A major repair or major alteration must be authorized by the manufacturer or a person acceptable to the FAA because the aircraft is built to a consensus standard that meets the requirements of part 22. The manufacturer is best suited to determine if the aircraft will continue to meet the means of compliance with the consensus standard following a major repair or major alteration. Additionally, a major repair or major alteration must be performed and inspected in accordance with maintenance and inspection procedures developed by the manufacturer or a person acceptable to the FAA.

#### 4. Changes to Certificated Mechanic Privileges

Currently, § 65.85(b) allows a certificated mechanic with an airframe rating to approve for return to service an airframe (or related part or appliance) of an aircraft with a special airworthiness certificate in the light-sport category, after a major repair or major alteration, provided the work done was performed in accordance with instructions

developed by the manufacturer or a person acceptable to the FAA.<sup>114</sup> Similarly, under § 65.87(b), the same privileges apply to a certificated mechanic with a powerplant rating for return to service a powerplant or propeller (or related part or appliance).

Under proposed § 91.327(b)(6), no person may operate an aircraft that has a special airworthiness certificate in the light-sport category unless each major repair or major alteration is authorized by the manufacturer or a person acceptable to the FAA and is performed and inspected in accordance with maintenance and inspection procedures developed by the manufacturer or a person acceptable to the FAA. Sections 65.85(b) and 65.87(b) currently do not align with the proposed § 91.327(b)(6) in a way that would require that a mechanic does not approve an airframe or powerplant for return to service with an unauthorized major repair or alteration. Performing the major repair or major alteration in accordance with instructions developed by the manufacturer or a person acceptable to the FAA may not sufficiently verify the aircraft or engine meet the proposed § 91.327(b)(6) requirement. Therefore, the FAA is proposing to add language to §§ 65.85(b) and 65.87(b) that requires, in addition to the existing requirement regarding instructions, the mechanic determine the major repair or major alteration is authorized by the manufacturer or a person acceptable to the FAA.<sup>115</sup>

## H. Operations

### 1. Aircraft Holding a Special Airworthiness Certificate in the Light-Sport Category

In general, § 91.327 does not currently allow a person to operate an aircraft with a special airworthiness certificate in the light-sport category for compensation or hire. However, § 91.327(a) does include two exceptions to this general prohibition against operations for compensation and hire: conducting flight training and towing a glider or an unpowered ultralight vehicle in accordance with § 91.309 are both permissible.

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<sup>114</sup> 69 FR 44847. This rule change gives the airframe or powerplant-rated mechanic the same privilege to perform and inspect major repairs and major alterations on special light-sport aircraft that this rule grants a repairman (light-sport aircraft) with a maintenance rating.

<sup>115</sup> See section V.F.1 for additional changes, technical in nature, proposed to §§ 65.85 and 65.87.

The FAA has received several petitions for exemptions and numerous industry requests related to increased opportunities for using light-sport category aircraft for compensation or hire.<sup>116</sup> These requests demonstrate significant public interest in expanding the use of light-sport category aircraft for compensation or hire.<sup>117</sup> Industry groups argue that light-sport category aircraft for certain aerial work for compensation and hire would be in the interest of public safety. For example, industry groups state that some of the public safety interests involve the safety of people and structures on the ground due to light-sport category aircraft being generally quieter, slower, and more agile than aircraft with standard airworthiness certificates. The FAA has considered industry requests, as well as the use of FAA-accepted consensus standards that can provide an appropriate level of safety, and the FAA agrees that limited expansion of the use of light-sport category aircraft for compensation and hire is in the public interest.

As previously stated, the FAA does not explicitly define aerial work. The FAA broadly interprets the term to mean work done from the air for compensation that does not involve the carriage of persons or property.<sup>118</sup> The FAA proposes to add a new paragraph in § 91.327 to allow for operation of light-sport category aircraft for aerial work for compensation or hire. The proposed amendment will allow light-sport category aircraft to conduct limited aerial work operations. Additionally, the proposed changes to the rule would not waive or provide exception from any of the provisions required by 14 CFR part 119 or any other rule requiring an air operator certificate. To be allowed to operate under the proposed amendment, light-sport category aircraft would be required to meet applicable requirements under § 21.190 concerning aerial work.

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<sup>116</sup> See Exemption granted to Operation Migration from 14 CFR §§ 61.113(a), 91.319(e), and 91.327(a), April 30, 2014, Exemption No. 10984, Docket No. FAA-2013-1075, available online at <https://www.regulations.gov/document/FAA-2013-1075-0004>.

<sup>117</sup> Dan Johnson & Roy Beisswenger. *Modernizing Rules for Sport Pilots and Light Sport Aircraft: 1.0 Aerial Work for Light-sport Aircraft*, (June 2018), Retrieved from LAMA Report Modernizing LSA.pdf.

Dan Pimentel, "Will MOSAIC Allow LSAs To Do More: The industry has lobbied the FAA to allow light sport aircraft to perform more aerial work tasks," *Flying Magazine*, (May 20, 2022), <https://www.flyingmag.com/will-mosaic-allow-lsas-to-do-more/>.

<sup>118</sup> See supra note 25 and accompanying text.

The FAA proposes amending § 21.190 to address aerial work operations, which would be designated by the manufacturer in the consensus standards accepted by the Administrator for airworthiness certification of light-sport category aircraft. The FAA proposes the addition of § 21.190(c)(3), which requires the manufacturer to include a list in the pilot's operating handbook of any aerial work operations that may be safely conducted using the aircraft. The proposed § 21.190(c)(3) requires the aforementioned list to also be included in the manufacturer's statement of compliance. The proposed amendments applicable to light-sport category aircraft will result in aircraft that must meet consensus standards for aerial work operations. When a light-sport category aircraft meets an FAA-accepted consensus standard, including one specific to aerial work, a light-sport category aircraft should provide an equivalent level of safety in comparison to aircraft that undergo the type-certification processes that are currently allowed to conduct aerial work. As such, this proposed change will allow aerial work to be conducted in parallel with the proposed changes applicable to airworthiness certification of § 21.190 aircraft.

The FAA recognizes that this is an ever-evolving field and seeks to not inhibit future innovation. As such, the proposed approach would not prescribe types of aerial work but would rather provide a path for a proven risk-based assessment of current and future aerial tasks. The agency does not propose relaxation of any of the existing regulatory safeguards that relate to aerial work operations, such as the minimum safe altitude, minimum safe distance, and minimum safe speed restrictions in part 91 and restrictions surrounding dispensing of chemicals in part 137. If an operator seeks to conduct aerial work operations that exceed existing rules, operators must obtain regulatory relief in the form of a Certificate of Waiver, Letter of Authorization, or an exemption.

The FAA anticipates that the proposed expansion of aerial work, along with the proposed amendments applicable to light-sport category aircraft, could lead to an increased interest in aerial work that involves carrying higher numbers of occupants. The FAA is proposing the addition of § 91.327(f)(1) and (2) to address these concerns. The proposed language states that no person may operate an airplane certificated as a light-sport category aircraft when carrying more than four occupants, including the pilot. Additionally, the proposed language states that no person may operate a light-sport category aircraft other than an airplane when carrying more than two occupants, including the pilot. The FAA does not have sufficient data for expanding the number of persons onboard an aircraft other than an airplane. The proposed addition of § 91.327(f)(1) and (2) does not change the restriction on certificated sport pilots not carrying more than two persons, including the pilot. Pilots with higher grades of certification will be able to operate light-sport category aircraft with the higher number of occupants allowed under the proposed § 91.327(f)(1) and (2).

The current definition of light-sport aircraft in 14 CFR 1.1 limits the seating capacity to no more than two persons, including the pilot. The proposed rules would expand this to a four-person occupancy limit for airplanes certificated as light-sport category aircraft and a two-person occupancy for light-sport category aircraft other than airplanes. The proposed rules are expected to lead to larger light-sport category aircraft. The larger size, along with the proposed expansion of aerial work, could result in situations where there are occupants who do not require a seat. The FAA has decided that a measured approach that limits the number of occupants on an aircraft is safest in the near term, as it will prevent situations where operators attempt to carry as many passengers that will physically fit in the aircraft. In light of the safety continuum, as discussed in section IV.C.5, the FAA has proposed a limit of four-person occupancy for light-sport category airplanes and two-person occupancy for light-sport category aircraft

other than airplanes because that is consistent with the maximum seating capacity in proposed § 22.100(a)(1) and (2). This is not a prohibition of persons being carried who are not in seats, but rather a limitation on the total number of occupants, including both those who are in seats and those who are otherwise restrained.

## 2. Aircraft Holding Experimental Airworthiness Certificates

Section 91.319(c) currently authorizes the Administrator to issue special operating limitations for particular aircraft holding experimental airworthiness certificates to conduct takeoffs and landings over densely populated areas or in congested airways. The terms and conditions specified in the authorization must be in the interest of safety in air commerce. The regulation only applies to takeoffs and landings; it does not currently authorize operating limitations to cover other flight segments. The current regulation presents difficulties for operators, as they can obtain special operating limitations for takeoff and landing, but not for any operations between takeoff and landing. Due to urban sprawl, it has become increasingly difficult for operators to avoid operating over densely populated areas.

To address inconsistencies and possible operator difficulties in the continuation of all flight segments, the FAA proposes to amend § 91.319(c) to allow the Administrator to grant operating limitations to certain aircraft with experimental certificates to conduct operations over densely populated areas or in congested airways, including, but not limited to, takeoffs and landings. This proposed amendment will allow the Administrator to issue special operating limitations that allow all phases of flight and expands the types of operations over densely populated areas or in congested airways.<sup>119</sup> The FAA anticipates such operating limitations will only be issued in certain circumstances, as described in subsequent paragraphs. The general prohibition against experimental aircraft operating over densely populated areas or in congested airways will continue to apply

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<sup>119</sup> 49 U.S.C. 44701 et seq.

under the proposed amendment to all aircraft that do not hold these special authorized operating limitations. When issuing such operating limitations, the FAA will consider several factors (discussed in subsequent paragraphs), including whether the aircraft in question is one of proven design and has records for continued operational safety.

With consideration of the continual safety trend of aircraft holding experimental certificates, there are several reasons why an operator may seek special operating limitations for their aircraft to conduct operations over densely populated areas or in congested airways, including, but not limited to, takeoffs and landings. One example involves operators conducting flights and other operations to show compliance with airworthiness regulations under § 21.191(b). An operator may need to takeoff, land, and operate over densely populated areas or in congested airways to show compliance for the issuance of type and supplemental type certificates and to show compliance with the function and reliability requirements of the airworthiness regulations. Other examples of when operators may seek these operating limitations over densely populated areas or in congested airways is to conduct market surveys, sales demonstrations, or customer crew training for U.S. manufacturers of aircraft or engines. Lastly, operators conducting research and development of new equipment installations, operating techniques, or aircraft uses may seek special operating limitations to conduct those operations over densely populated areas or in congested airways.

The Administrator will consider many factors when determining which aircraft, certificated under § 21.191, may be issued the operating limitations to operate over a densely populated area or in congested airways. The Administrator may grant operating limitations to certain aircraft with experimental certificates that demonstrate significant safety attributes and records for continued operational safety, which enable them to operate over densely populated areas. Even though there is a broad variety of experimental aircraft with differing levels of safety and risk, the process of issuing



experimental aircraft airworthiness certificates is an established process for all experimental aircraft. Not all aircraft that hold experimental certificates are true “experiments,” as that term is commonly understood. While the term “experimental” is used to describe these aircraft, that does not automatically mean they lack evidence of continued operational safety or a strong safety record. A significant number of aircraft hold experimental airworthiness certificates and, while some of these aircraft lack sufficient evidence of safety to be issued the proposed operating limitations, many aircraft holding experimental certificates have consistently demonstrated safe operational records. For instance, there are large manufacturing companies performing market survey operations, in accordance with FAA certification processes and significant operating oversight.

The FAA recognizes that some aircraft holding experimental airworthiness certificates pose overly significant risk to the general public and will not consider extending the proposed operating limitations to those aircraft. At a minimum, the FAA expects that all aircraft who are issued the proposed operating limitations, including any attached appliances, will conform to airworthiness requirements and any applicable airworthiness directives. Additionally, the FAA anticipates that the proposed operating limitations would not be issued to experimental aircraft that have had alterations or appliances that have not been adequately tested by the original manufacturer. In order to determine whether an aircraft with alterations or appliances would be able to obtain this operating limitation, the FAA would consider all facts presented by the operator, as well as procedures described in FAA guidance, including FAA Order 8130.2. This is similar to the process used for issuing operating limitations currently. Such procedures would be developed following this rulemaking and would be made available for public comment prior to adoption.

Some amateur and kit-built aircraft may be able to obtain the proposed operating limitations to operate over densely populated areas or in congested airways, although the FAA currently has no intention of considering original or plans-built designs for issuance of these operating limitations. Depending upon the type of kit and the aircraft's similarity to its kit model, the FAA may consider granting these operating limitations to certain kit-built aircraft because of the high level of consistency among kit-built aircraft.

There are specific aircraft features that the FAA may consider before issuing operating limitations to operate over densely populated areas or in congested airways. First, the FAA is concerned about the increased risk that results from an aircraft that has a single point of failure. When an experimental aircraft has a single point of failure, such as the loss of a single hydraulic in an aircraft that uses that system for flight controls, flight will become unrecoverable. Such aircraft will not be eligible for the proposed operating limitations, as they have a higher risk to persons and property on the ground. Having redundant systems increases safety for persons and property on the ground. Second, the FAA is concerned about the increased risk from allowing aircraft with ejection seats or detachable external stores to operate over densely populated areas. If an aircraft is equipped with an ejection seat, deployment of that seat over a densely populated area would significantly increase risk to persons on the ground. Similarly, if a detachable external store fails and detaches from the aircraft while operating over densely populated areas, there would be significant risk to persons on the ground. The aforementioned examples are some attributes that would cause the FAA to consider not issuing the proposed operating limitations, but the examples are not an exhaustive list.

Beyond the aircraft conforming to original airworthiness requirements and having adequately tested alterations and appliances, the FAA may also consider actions taken by the operator to decrease risk. For example, the FAA views an aircraft that has completed a structured, task-based phase I testing process as potentially posing a lower risk over

densely populated areas and in congested areas. Therefore, these aircraft could be recipients of the proposed operating limitations. Phase I flight testing is the initial flight-testing period for a newly assembled aircraft. All experimental aircraft seeking an airworthiness certificate must complete initial flight testing. Structured “task-based” testing provides the operator and the agency with consistent and reliable data for these aircraft. Several methods of phase I testing are available. One method is to develop and execute a “task-based” phase I flight test plan to obtain an airworthiness certificate. Completing a successful task-based phase I flight test plan process results in a document specific to the aircraft, as compared to an aircraft that has not completed a structured phase I flight test plan process and has only completed the minimum required flight time option and maintenance record entry. Additionally, the completion of a task-based phase I flight test plan is one action the operator can take that may decrease risk to persons and property on the ground during operations over densely populated areas.<sup>120</sup> The FAA anticipates that aircraft granted the proposed operating limitations may be subject to additional requirements, such as increased maintenance requirements, in order to establish an equivalent level of safety.

### 3. Space Support Vehicles

This rule would implement language in Section 581 of the FAA Reauthorization Act of 2018 (the Act), which authorizes certain aircraft holding experimental certificates to conduct space support vehicle flights. The Act provides definitions for “space support vehicle” and “space support vehicle flight.” The Act also adopted 49 U.S.C. 44737, which provides the rules for space support vehicle flights. To maintain consistency with the congressional language, the FAA proposes to adopt the same language used in

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<sup>120</sup> See FAA Order 8130.2J, *Airworthiness Certification of Aircraft*, Appendix D, Table D-1, Operating Limitations (July 21, 2017). See FAA Advisory Circular 90-89C, *Amateur-Built Aircraft and Ultralight Flight Testing Handbook*. (February 14, 2023).

section 44737. The FAA is also proposing regulatory amendments necessary to integrate the statutory language into 14 CFR.

As defined in the Act, a space support vehicle is an aircraft that is a launch vehicle, a reentry vehicle, or a component of a launch or reentry vehicle. As stated in the statute, only aircraft holding experimental certificates that are also a launch vehicle, a reentry vehicle, or a component of a launch or reentry vehicle can be considered space support vehicles. Under this proposed rule, the definitions from the statute will be added to 14 CFR part 1 to facilitate implementation of that law. The FAA does not intend to create a new experimental purpose for space support vehicles to operate under in this rule. Instead, space support vehicles would conduct space support vehicle flights under an existing § 21.191 experimental purpose, such as research and development or crew training. Additionally, the Act requires that space support vehicles must be owned by or operated on behalf of a licensed launch or reentry vehicle operator.

Space support vehicle flights are distinct from licensed launch or reentry operations. Per the Act, an operator may conduct space support vehicle flights only to simulate space flight conditions in support of training for potential space flight participants, government astronauts, or crew; the testing of hardware to be used in space flight; or research and development tasks, which require the unique capabilities of the aircraft conducting the flight. Additionally, the aircraft conducting the space support vehicle flight is required to take off and land at a single site that is licensed for operation under 51 U.S.C. chapter 509.

Per the Act, the operator of an aircraft may conduct space support vehicle flights under an experimental airworthiness certificate carrying persons or property for compensation or hire. These flights may include carriage of persons or property for compensation or hire without obtaining an exemption to operating rules or a certificate to conduct air carrier or commercial operations. In contrast, operators seeking to conduct

such activities for other experimental purposes must obtain an exemption to operating rules or a certificate to conduct air carrier or commercial operations.

The FAA proposes to amend § 91.319 in two ways in order to integrate space support vehicle flights into the operations regulations for aircraft holding experimental certificates. First, to implement the statutory authorization for space support vehicles, the FAA proposes the addition of § 91.319(k). This proposed addition will allow the operator of an aircraft with an experimental airworthiness certificate to operate the aircraft for the purpose of conducting a space support vehicle flight. Second, the FAA proposes to amend § 91.319(a) to reflect the addition of paragraph (k).

To implement the statutory mandate in the Act, the FAA also proposes the addition of a new section addressing operating limitations for space support vehicle flights. This proposed new section, § 91.331, provides general operating requirements applicable to aircraft holding experimental certificates that will conduct space support vehicle flights. Section 91.331 would establish the same operating requirements as provided in the Act, which includes the requirements related to where takeoff and landing are to occur; who can conduct the operation; which vehicle can be used; and the purposes for which the vehicles can be used for. There will be only one change, as section 44740(b)(1)(A) refers to “a single site that is operated by an entity licensed for operation under chapter 509 of title 51.” Since the only sites licensed by the FAA under title 51 of the United States Code are launch and reentry sites, proposed § 91.331(a)(2)(1) would instead refer to “a single launch or reentry site that is operated by an entity licensed to operate the launch or reentry site under 51 U.S.C. chapter 509.”

Upon receipt of a request for an operating limitation to conduct a space support vehicle flight, the FAA would consider whether the requirements of proposed § 91.331 are met. While it would be relatively easy to determine if certain elements of proposed § 91.331 are met (such as whether the location of takeoff and landing is a qualifying

launch or reentry site), others would require a more intensive, fact-specific approach. For example, if the operator wants to conduct space support vehicle flights for the purpose of research and development tasks, the FAA will analyze the specific facts proffered by the operator to determine whether the research and development tasks require the unique capabilities of the aircraft conducting the flight, as required by the proposed § 91.331. If the operator wants to conduct a space support vehicle flight for the purpose of training potential space flight participants, government astronauts, or crew, the operator would need to demonstrate that such persons have taken sufficient steps towards becoming space flight participants, government astronauts, or crew. The FAA would develop guidance to assist operators in developing their space support vehicle flight proposals, such as guidance related to what constitutes a unique capability of the aircraft and what documentation should be provided to support the status of a space flight participant, government astronaut, or crew. The FAA also proposes to amend § 119.1(e) by adding a new paragraph, paragraph (e)(12), to allow for the operation of such aircraft for the purpose of conducting a space support vehicle flight under the requirements of the proposed § 91.331. The proposed addition of § 119.1(e)(12) would add language to exclude space support vehicle flights from the requirements of part 119 relating to air carrier certificates. The addition of § 119.1(e)(12) is necessary in order to implement section 581 of the Act in the regulations.

#### 4. Right-of-Way Rules

Section 91.113 provides the right-of-way rules for operations other than those conducted on water. The right-of-way rules instruct pilots on how they must respond to other aircraft they encounter and are based on the category of aircraft or the operational scenario. Pilots must be vigilant to see and avoid other aircraft; and as always, aircraft in distress have the right-of-way over all other air traffic. The current regulation outlines specific categories of aircraft that a balloon, a glider, or an airship have right-of-way over

when converging at approximately the same altitude (except head-on, or nearly so). By explicitly naming specific categories of aircraft, the current § 91.113(d)(2) and (3) do not provide information for how operators of other categories of aircraft not listed in § 91.113 are expected to comply with the intent of the rule. This may lead to confusion, especially for those operators of aircraft that are not explicitly included in the current § 91.113.

The FAA proposes to amend § 91.113(d)(2) and (3) to update the language by replacing the lists of aircraft in paragraphs (d)(2) and (3) with the broader term “powered aircraft.” These proposed amendments remove specific categories to include other powered aircraft not included in the existing rule, as the current rule is too narrow. The new language uses the term “powered aircraft” to include those categories. These amendments clarify the language in § 91.113(d) where aircraft are categorized for the purpose of describing which aircraft has the right-of-way when approaching another aircraft on a converging course. Right-of-way rules maintain the privilege of less maneuverable aircraft to safely proceed with priority over more maneuverable aircraft in the NAS. The proposed § 91.113(d)(2) continues to give gliders right-of-way over powered aircraft. Additionally, the proposed § 91.113(d)(3) continues to give airships right-of-way over all other powered aircraft, except for those powered aircraft that are towing or refueling another aircraft. Balloons will continue to have the right-of-way over any other aircraft category.

Finally, for consistency and clarity, the proposed language updates the previous language of the paragraph describing engine-driven aircraft to “powered aircraft.” The FAA chooses the term “powered aircraft” instead of “engine driven” to better convey the inclusion of aircraft that may have non-traditional forms of propulsion, including electric propulsion.

## 5. Operations at Airports in Class G Airspace

Section 91.126 provides requirements for operations on or in the vicinity of an airport in Class G airspace, including the direction of turns when approaching the airport, flap settings, and communications with air traffic control towers. Currently, § 91.126(b) requires that, when approaching to land at an airport without an operating control tower in Class G airspace, each pilot of a helicopter or a powered parachute must avoid the flow of fixed-wing aircraft. This requirement only addresses helicopters and powered parachutes. It does not currently consider other types of aircraft that may require access to these airports. Since its adoption, the current regulation has become inadequate in this regard, as it only addresses specific aircraft and does not consider emerging aircraft technologies, such as powered-lift.

To address all other aircraft under these requirements, the FAA proposes to amend § 91.126(b)(1) to state that each pilot of a powered fixed-wing aircraft and powered-lift aircraft operating in wing-borne flight mode must make all turns of that aircraft to the left unless the airport displays approved light signals or visual markings indicating that turns should be made to the right, in which case the pilot must make all turns to the right. The FAA is also proposing to amend § 91.126(b)(2) to require that each pilot of any other aircraft must avoid the flow of the types of aircraft listed in proposed § 91.126(b)(1), specifically powered fixed-wing aircraft and powered-lift aircraft operating in wing-borne flight mode. The term “any other aircraft” in proposed § 91.126(b)(2) would include, but would not be limited to, weight-shift aircraft, helicopters, and powered parachutes. When powered-lift aircraft are operating in wing-borne flight mode, they have similar flight characteristics as fixed-wing aircraft. As such, the proposed language explicitly treats powered-lift aircraft operating in wing-borne flight mode as fixed-wing aircraft. However, powered-lift aircraft operating in vertical-lift flight mode are not equivalent to fixed-wing aircraft and will therefore not be treated



the same. The purpose of this proposed amendment is to address all aircraft that could be involved in operations on or in the vicinity of an airport in Class G airspace.

The proposed change would improve aircraft separation in the interest of safety by considering operational needs, aircraft configurations, and speeds to enhance avoidance of dissimilar aircraft. While there are many kinds of aircraft that are now grouped together under the proposed rule, those aircraft have similar flight and maneuvering characteristics and therefore should be kept separate from powered fixed-wing aircraft. Currently, non-powered, non-fixed-wing aircraft (other than powered parachutes and helicopters, which are kept separate under the current rule) are expected to operate in the same traffic pattern as powered fixed-wing aircraft. By separating powered fixed-wing aircraft from all other aircraft, this proposal intends to reduce risk to all aircraft by limiting all non-powered, non-fixed-wing aircraft from operating in the same traffic pattern as powered fixed-wing aircraft.

#### 6. Towing

Section 91.309(a)(2) currently prohibits civil aircraft from towing a glider or unpowered ultralight vehicle unless it is equipped with a tow-hitch of a kind, and installed in a manner, which is approved by the Administrator. When the FAA issued the 2004 final rule, the FAA stated in the preamble that towing operations by light-sport aircraft would be allowed. However, the 2004 final rule failed to actually amend the regulation to address such operations. The FAA is proposing to amend § 91.309(a)(2) to clarify the addition of light-sport category aircraft for towing operations and remedy the oversight in the 2004 final rule.

The proposed language creates three paragraphs, each addressing a separate combination of the category of airworthiness certificate issued to an aircraft and whether that aircraft was issued a type certificate. Additionally, each paragraph of the proposed regulations addresses the certification requirements of the tow-hitch, as a product/article

to be installed on an aircraft, as well as the manner of installation of the tow-hitch. The FAA uses the terms “approved by the Administrator,” “authorized by the Administrator,” and “acceptable to the Administrator” in the following paragraphs. Table 3 summarizes the differences among the terms used in § 91.309(a)(2).

**Table 3 — § 91.309(a)(2) Terminology**

Where § 91.309(a)(2) Uses . . .	The Proposal Means . . .
Approved by the Administrator (i.e., FAA-approved)	<p>Part/article approval may be done during the type-certification process under part 21, subpart B, the Supplemental Type Certificate (STC) process under part 21, subpart E, or the Parts Manufacture Approval (PMA) process under part 21, subpart K.</p> <p>Installation approval may be done during the type-certification process under part 21, subpart B, the Supplemental Type Certificate (STC) process under part 21, subpart E, or the FAA’s field approval process.</p>
Authorized by the Administrator	While there may be other methods of authorization, the FAA can authorize the installation of the tow-hitch in the operating limitations issued to the aircraft or using the FAA’s field approval process.
Acceptable to the FAA	<p>This term means the tow-hitch or installation is not necessarily privy to the FAA’s review before its installation or use.</p> <p>FAA Advisory Circular (AC) 43.13-2B, <i>Acceptable Methods, Techniques, and Practices – Aircraft Alterations</i> contains acceptable methods for tow-hitch installations in Chapter 8. Consensus standards and manufacturers’ maintenance manuals are also acceptable to the FAA.</p>

First, for those aircraft that hold a standard airworthiness certificate, the proposed language requires that the tow-hitch is approved by the Administrator. Additionally, the tow-hitch is required to be installed in a manner approved by the Administrator. The

proposed language maintains the current requirement for aircraft holding standard airworthiness certificates.

Second, for those type-certificated aircraft that hold a special airworthiness certificate, and for which the aircraft has been previously issued a type certificate,<sup>121</sup> the proposed language would require the tow-hitch be of a kind that is approved or otherwise authorized by the Administrator. Although these aircraft may have been issued a special airworthiness certificate, the fact that the aircraft was issued a type certificate means that the aircraft must continue to meet its type design after an alteration to install a tow-hitch. A tow-hitch installation for an aircraft issued a type certificate may be done after the installation is FAA approved. This is the same requirement that is currently imposed on aircraft with a standard airworthiness certificate engaged in towing gliders or unpowered ultralight vehicles. However, because these aircraft hold a special airworthiness certificate and are issued associated operating limitations, the FAA is proposing an alternative to the tow-hitch and/or the installations having FAA approval. Under the proposal, these aircraft may have a tow-hitch and/or installation that is authorized by the Administrator using some other manner, such as in the operating limitations issued to the aircraft.<sup>122</sup> In these instances, the FAA will verify that there will be an equivalent level of safety when the Administrator authorizes a tow-hitch or installation method.

Third, for those aircraft that hold a special airworthiness certificate, for which the aircraft has not been previously issued a type certificate, the proposed language would allow for a tow-hitch of a kind that is FAA approved. As an alternative to installing an FAA-approved tow-hitch, the tow-hitch may instead be one that is acceptable to the FAA. However, regardless of whether the tow-hitch is approved by or acceptable to the

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<sup>121</sup> For example, this could include aircraft in the limited, primary, restricted, or provisional category, or aircraft issued an experimental certificate for a purpose under § 21.191(a) through (f), when that aircraft has been previously issued a type certificate.

<sup>122</sup> For example, if a person were using an aircraft that had been issued a TC to test a tow-hitch design, the aircraft could be issued an experimental certificate for the purpose of showing compliance with the regulations. The FAA would authorize the installation of the tow-hitch in the operating limitations issued to the aircraft.

FAA, the tow-hitch must be installed in a manner acceptable to the FAA. As noted in the 2004 final rule, there is historical precedent for towing operations by light-sport aircraft. The FAA has determined that such operations can be conducted safely when using a tow-hitch approved by the Administrator, so long as the tow-hitch is installed in a manner acceptable to the Administrator. The proposed language allows the option to install a tow-hitch that does not have FAA approval because the aircraft itself was never subject to an FAA approval process, as were those aircraft that were issued a type certificate. Table 4 provides clarity of the proposed tow-hitch and tow-hitch installation requirements in § 91.309(a)(2).

**Table 4 — § 91.309(a)(2) Tow-Hitch and Installation Requirements**

Aircraft in Proposed § 91.309(a)(2)	Tow-Hitch Certification	Tow-Hitch Manner of Installation
(i) Aircraft holds a standard airworthiness certificate	FAA-approved	Approved by the Administrator
(ii) Aircraft holds a special airworthiness certificate; and The aircraft design was issued a type certificate.	FAA-approved or Otherwise Authorized by the Administrator	FAA-approved; or Otherwise Authorized by the Administrator
(iii) Aircraft holds a special airworthiness certificate; and The aircraft design was not issued a type certificate.	FAA-approved; or Acceptable to the FAA	Acceptable to the FAA

## 7. Section 91.409 Clarifying Amendment

Section 91.409 provides inspection requirements for aircraft operation. The language under § 91.409(c)(1) provides operational inspection exceptions for specific aircraft airworthiness certificates under § 91.409. The FAA proposes to amend § 91.409(c)(1) by removing the first “or” and adding the words “airworthiness certificate” following the word “light-sport” within the list of special airworthiness certificates. The proposed § 91.409(c)(1) states that an aircraft that carries a special flight permit, a current experimental certificate, a light-sport airworthiness certificate, or provisional airworthiness certificate. This amendment would provide better clarity, readability, and understanding for the operator for proper use of the exception.

### I. Experimental Airworthiness Certificates

#### 1. Duration of Light-Sport Category Airworthiness Certificates

Currently, § 21.181(a)(3) states that a special airworthiness certificate in the light-sport category will remain effective as long as the aircraft meets the definition of a light-sport aircraft and the aircraft conforms to its original configuration, except for those alterations performed in accordance with an applicable consensus standard and authorized by the aircraft's manufacturer or a person acceptable to the FAA. Additionally, the aircraft must not have any unsafe condition and not be likely to develop an unsafe condition. It also must be registered in the United States.

Under proposed § 21.181(a)(3)(i), an aircraft issued an airworthiness certificate in the light-sport category would have to meet the eligibility criteria specified in proposed § 21.190(b) for its airworthiness certificate to remain effective. The specific eligibility requirements would reflect the expanded scope and performance of aircraft that could be certificated in the light-sport category and are discussed in detail in sections IV.C. and IV.D. of this preamble.

Aircraft issued airworthiness certificates in the light-sport category before the effective date of the final rule may not be able to meet the requirements in proposed § 21.190(b), as these aircraft would have been designed and produced before the enactment of the proposed requirements. Accordingly, proposed § 21.181(a)(3)(iv) would allow these aircraft to maintain their special airworthiness certificates. The duration of airworthiness certificates issued for these aircraft would remain unaffected provided the aircraft still meet the parameters of the definition of light-sport aircraft found in current § 1.1 and the other applicable requirements discussed in this section. The parameters that these aircraft would be required to meet would be specifically listed in the proposed paragraphs (a)(3)(iv)(A) through (M) and are identical to those contained in the current definition of light-sport aircraft found in § 1.1. They would be specifically listed in the proposed regulation since the current definition of light-sport aircraft containing those parameters would be removed from § 1.1.

Proposed § 21.181(a)(3)(ii) would revise the current requirement specifying that for an airworthiness certificate in the light-sport category to be effective the aircraft must conform to its original configuration, except for those alterations performed in accordance with an applicable consensus standard and authorized by the aircraft's manufacturer or a person acceptable to the FAA. This requirement would be revised to specify the aircraft must conform to its original or properly altered configuration. The proposed revision would conform the provisions of proposed § 21.181(a)(3)(ii) to another proposal in this NPRM which would revise § 91.327 to no longer require that the performance of minor alterations be authorized by the manufacturer or a person acceptable to the FAA. Accordingly, minor repairs and minor alterations performed in accordance with acceptable methods, techniques and practices that meet the provisions of the applicable consensus standards and part 43 would result in an aircraft that would conform to a properly altered configuration. Any minor repair or minor alteration not

performed in accordance with applicable consensus standards would result in the aircraft not conforming to a properly altered condition.

The proposal would also retain current provision in § 21.181(a)(3)(iii) specifying that for the airworthiness certificates of aircraft certificated in the light-sport category to remain effective the aircraft must have no unsafe condition and not be likely to develop an unsafe condition. The current requirement in § 21.181(a)(3)(iv) that these aircraft be registered in the United States for their airworthiness certificates to remain effective would also continue to remain applicable; however, since that requirement applies to all aircraft issued airworthiness certificates, the FAA proposes that the requirement is better placed in § 21.181(a), where it would be applicable to all airworthiness certificates.

## 2. Issue of Experimental Airworthiness Certificates

In this proposed rule, the regulatory wording of § 21.191 would be revised from “Experimental certificates are issued for the following purposes:” to “Experimental airworthiness certificates are issued for the following experimental purposes.” “Experimental certificates” would be changed to “Experimental airworthiness certificates” to clarify that experimental certificates are airworthiness certificates and that they are issued for the experimental purposes listed in § 21.191. The term “purposes” would be revised to “experimental purposes” to clarify that the purposes in § 21.191 are experimental. These changes are also being proposed to align with a change in § 21.175, which proposes to clarify that special airworthiness certificates are issued for aircraft operating for an experimental purpose.

This rule proposes to retain § 21.191(a) through (h), revise § 21.191(i), and add § 21.191(j) and (k).

## 3. Operating Former Light-Sport Category Aircraft

Currently § 21.191(i), Operating light-sport aircraft, consists of three sections. Each section was created for a particular type of aircraft. The first section, identified in

§ 21.191(i)(1), applies to aircraft that have not been issued a U.S. or foreign airworthiness certificate and do not meet the provisions of 14 CFR 103.1. These aircraft are commonly referred to as “fat ultralights.” As provided in § 21.191(i)(1), an experimental certificate will not be issued under this paragraph for these aircraft after January 31, 2008. As such, the FAA is proposing to delete this requirement. The second section, identified in § 21.191(i)(2), applies to light-sport aircraft that have been assembled from a kit in accordance with manufacturer's assembly instructions that meet an applicable consensus standard. The FAA is proposing to move this requirement to § 21.191(j) as discussed in section IV.I.3. The third section, identified in § 21.191(i)(3), applies to aircraft previously issued an airworthiness certificate in the light-sport category. This last section would be retained in § 21.191(i).

This rule proposes to revise the heading of § 21.191(i) from “Operating light-sport aircraft” to “Operating former light-sport category aircraft.” This section would contain the same experimental purpose as the current § 21.191(i)(3), which includes aircraft that have previously been issued a special airworthiness certificate in the light-sport category under § 21.190. Aside from the relocation from § 21.191(i)(3) to § 21.191(i) and the revision of the heading, this proposal would not further materially change this section.

This rule would eliminate § 21.191(i)(1) that allows for airworthiness certification of “fat ultralights.” These aircraft have not been issued a U.S. or foreign airworthiness certificate and do not meet the provisions of 14 CFR 103.1. These aircraft were provided a small timeframe in which they could be issued an airworthiness certificate under this experimental purpose and that timeframe closed on January 31, 2008, pursuant to § 21.191(i)(1). As such, this paragraph would be eliminated from this revised rule since these aircraft can no longer be issued an airworthiness certificate under this section.



#### 4. Operating Light-Sport Category Kit-Built Aircraft

This rule would create a new experimental purpose, “Operating light-sport category kit-built aircraft” in § 21.191(j), specifically for light-sport category kit-built aircraft that are currently being certificated under § 21.191(i)(2). Aircraft certificated under this experimental purpose would continue to include those that have been certificated under § 21.190 and assembled from an aircraft kit in accordance with the manufacturer’s assembly instructions that meet an applicable consensus standard.

The items the applicant must provide to apply for an experimental airworthiness certificate for a light-sport category kit-built aircraft currently exist in § 21.193(e). This rule would relocate these application items for light-sport category kit-built aircraft from § 21.193(e) to § 21.191(j) with minor changes. Section 21.193(e)(1) requires evidence that an aircraft of the same make and model was manufactured and assembled by the aircraft kit manufacturer and issued a special airworthiness certificate in the light-sport category. This proposed rule, in § 21.191(j)(1), would clarify that the issuance of a special airworthiness certificate in the light-sport category would occur under § 21.190.

Section 21.193(e)(2) requires the applicant to provide a copy of the aircraft’s operating instructions and § 21.193(e)(5) requires the applicant to provide a copy of the aircraft’s flight training supplement. These requirements would be relocated to § 21.191(j)(2) in this rule and would change “the aircraft’s operating instructions” and “the aircraft’s flight training supplement” to “the pilot’s operating handbook that includes a flight training supplement,” to standardize with terminology proposed for use throughout § 21.190 and part 22 of this proposal.

Section 21.193(e)(3) requires the applicant to provide a copy of the aircraft’s maintenance and inspection procedures. This requirement would be moved to § 21.191(j)(3) in this rule.

Section 21.193(e)(4) requires the applicant to provide the manufacturer’s statement of compliance for the aircraft kit used in the aircraft assembly that meets § 21.190(c), except that instead of meeting § 21.190(c)(7), the statement must identify assembly instructions for the aircraft that meet an applicable consensus standard. This proposed rule would move this requirement to § 21.191(j)(4) and clarify that the aircraft kit must comply with the applicable requirements of § 21.190 and part 22 in effect at the time the aircraft kit was manufactured, except the statement of compliance need not indicate compliance with § 22.100 for flight and ground testing in accordance with a production acceptance test procedure. This change is necessary because this rule would contain the applicable requirements throughout § 21.190 that an applicant would have to comply with in addition to the manufacturer’s statement of compliance. Additionally, design, production, and airworthiness requirements that must be complied with would be in part 22 of this proposed rule.

Finally, current § 21.193(e)(6) requires an applicant for an aircraft kit manufactured outside the United States to show evidence that the aircraft kit was manufactured in a country with which the United States has a Bilateral Airworthiness Agreement concerning airplanes or a Bilateral Aviation Safety Agreement with associated Implementation Procedures for Airworthiness concerning airplanes, or an equivalent airworthiness agreement. This requirement would remain unchanged in the proposed rule and relocated to § 21.191(j)(5).

**Table 5 – Proposed Changes to § 21.191(i) *Operating light-sport aircraft***

Current Purpose:	Proposed Purpose:
§ 21.191(i)(1) (“fat-ultralights”)	Removed from § 21.191; timeframe closed on January 31, 2008
§ 21.191(i)(2) (light-sport kit)	§ 21.191(j) <i>Operating light-sport category kit-built aircraft</i> ; would include provisions from current § 21.193(e)
§ 21.191(i)(3) (former §21.190)	§ 21.191(i) <i>Operating former light-sport category aircraft</i>

## 5. Operating Former Military Aircraft

This rule would create a new experimental purpose for former military aircraft to be added as § 21.191(k). To be eligible for an experimental airworthiness certificate under the proposed rule, aircraft would have to be manufactured, purchased, or modified under contract by the U.S. Armed Forces or a foreign military. This proposed requirement would establish the military history of the aircraft as a prerequisite for eligibility under this section. The aircraft would have to have been a military aircraft before the FAA would consider the aircraft a former military aircraft. Under the proposed rule, unmanned aircraft (UA) would be excluded from eligibility for an airworthiness certificate under this purpose.

This additional purpose is necessary to allow for flights conducted by these aircraft between their public aircraft operations performed on behalf of the Department of Defense (DOD). Since fiscal year 2015, the DOD components have increased the use of air support contracts, including contracting for more flying hours and expanding the number of training locations, to address training requirements. DOD components awarded almost \$8.4 billion for air support contracts in fiscal years 2015 through 2021.<sup>123</sup> These contracts provide non-military aircraft and personnel to replicate the role of combat aircraft for various training activities. DOD has used contracts to meet training needs, address shortages in available military aircraft and crew members, and manage costs.

Many of these DOD operations involve contract air support operations that use civilian contractor aircraft and personnel. Some examples of contract air support operations are ordinance delivery, target towing, aerial refueling, and aggressor training,

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<sup>123</sup> Government Accountability Office, *Report to the Committee on Armed Services of the United States House of Representatives* (Dec. 2021), <https://www.gao.gov/assets/gao-22-104475.pdf>.

in which military pilots are provided with simulated adversaries to replicate combat activities. Although contract air support aircraft have been issued experimental airworthiness certificates for the purpose of exhibition and crew training, there currently is no experimental purpose available that adequately addresses the DOD's needs with regard to contract air support. Although the operations conducted under the contract with DOD may be conducted as public aircraft operations, any operations the aircraft may perform that do not meet the statutory requirements for public aircraft operations would be a civil aircraft operation subject to FAA airworthiness requirements.

Existing airworthiness requirements for experimental aircraft such as exhibition and crew training also may not include the mitigations appropriate to the operation of these aircraft. To date, former-military aircraft seeking to conduct contract air support operations typically have sought experimental airworthiness certificates for the purposes of exhibition and crew training which the FAA has issued accompanied by specific operating limitations developed for each purpose in accordance with § 91.319(i) and FAA Order 8130.2.<sup>124</sup> As the DOD has increased its use of contract air support operations over time, the FAA has become aware that issuing experimental airworthiness certificates under the current available purposes may result in a misalignment of the issued experimental purpose and the operations being conducted. The proposed experimental purpose will align the civil operations to be conducted and the purpose for which these certificates are sought.

To better allow these aircraft to operate as civil aircraft, the FAA proposes to establish a new experimental purpose for former military aircraft that would allow for three types of civil operation. First, aircraft with this purpose would be able to fly the aircraft to a base where repairs, alterations, or maintenance would be performed. Aircraft often need to be taken to specific locations to have requisite repairs, alterations, and

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<sup>124</sup> FAA Order 8130.2J, *Airworthiness Certification of Aircraft* (July 21, 2017).

maintenance, whether scheduled or unscheduled. Second, aircraft with this purpose would be able to fly the aircraft to a point of storage. When not being used for contract air support operations, these aircraft are typically not housed on military property and need to be kept in storage facilities that meet certain security, size, and environmental requirements. As such, allowing for flight between the contract air support operations and where the aircraft are housed is necessary. Third, aircraft with this purpose would be able to be repositioned for use under contract with the DOD. Contract air support operations occur at various DOD installations and within special use airspace, with the same aircraft often being used for contract air support operations at different locations. As the flight between the two locations would not be considered a public aircraft operation, this purpose will cover the relocation flight necessary for the aircraft to fulfill contractual requirements. These purposes are also aligned with the types of operations generally allowed under a special flight permit. Unlike a special flight permit, however, this rule would allow these aircraft to seek an experimental airworthiness certificate rather than get specific permission for each such operation. The proposed experimental purpose would enable the DOD to use contract air services more effectively and enable the FAA to oversee the civil use of these aircraft more efficiently. Such civil air support operations are critical to the defense readiness of the United States. The three authorizations proposed by the FAA provide a pathway for the DOD contractors to conduct limited civil operations.

#### 6. Application for Special Airworthiness Certificates Issued for Experimental Purposes

With the documentation requirements for light-sport category kit-built aircraft proposed for relocation from § 21.193(e) to § 21.191(j), the remaining requirements in § 21.193(a) through (d) are those necessary for the application for an airworthiness certificate for an experimental purpose. In accordance with these proposed revisions, the

heading of this section would be changed from “Experimental certificates: general” to “Application for special airworthiness certificates issued for experimental purposes.”

Section 21.193(a) requires a statement, in a form and manner prescribed by the FAA setting forth the purpose for which the aircraft is to be used. This rule would omit the first half of this requirement: “A statement, in a form and manner prescribed by the FAA...” In this proposed rule, § 21.193(a) would require an applicant to submit the experimental purpose for which the aircraft would be used and § 21.193(b) would require an applicant to submit enough information to describe the planned operation, equipment, or test, as applicable. Combined, these two requirements would necessitate more than a “statement” from the applicant, as currently required by § 21.193(a). The applicant would be required to provide the § 21.191 purpose(s) for which application is being made as well as provide enough data for the FAA to understand the scope, risks, and hazards of the planned operations, equipment, or test, as applicable.

Section 21.193(b) requires enough data (such as photographs) to identify the aircraft when making application for an airworthiness certificate for an experimental purpose. This proposed rule, in § 21.193(e), would change this requirement by removing the phrase “such as photographs” to clarify that other means of identification are permitted.

The FAA is not changing the requirement in § 21.193(c) stating that, upon inspection of the aircraft, any pertinent information found necessary by the FAA to safeguard the general public must be submitted by the applicant. In this proposal, this requirement would simply be moved to § 21.193(g).

Section 21.193(d)(2) requires the applicant to submit the estimated time or number of flights required for the experiment. This proposed rule would keep this requirement in § 21.193(c) but would make it applicable only for an applicant seeking issuance of an experimental airworthiness certificate for those experimental purposes

specified in § 21.191(a) through (f). This change is necessary because the other experimental purposes (i.e., operating amateur-built aircraft, operating former light-sport-category aircraft, and operating light-sport category kit-built aircraft) are not dependent upon time or accomplishing a specific number of flights to validate their experimental purpose. The experimental purposes of research and development, showing compliance with regulations, crew training, and market survey would all be subject to a certificate duration of three years or less under this rule, or they could indicate the number of flights it will take to complete their experiment or operation. Applicants for the exhibition and air racing experimental purposes would identify the number of flights, typically planned at events such as airshows, movie or television productions, or air races. In this section, the word “experiment” in § 21.193(d)(2) would be changed to “operation” in § 21.193(c) of this rule to reflect that not all the experimental purposes in § 21.191(a) through (f) involve experiments. Replacing “experiment” with “operation” more accurately describes the flight operations of these experimental purposes.

The current requirement in § 21.193(d)(3) for applicants to submit the areas over which the experiment will be conducted when applying for an airworthiness certificate for an experimental purpose would move to § 21.193(d) in this proposed rule. Consistent with other requirements in this section in this proposed rule, the word “experiment” would be changed to “flight” to show that not all experimental purposes involve experiments.

Finally, current § 21.193(d)(4) requires applicants for an airworthiness certificate for an experimental purpose to provide three-view drawings or three-view dimensioned photographs of the aircraft, except for aircraft converted from a previously certificated type without appreciable change in the external configuration. This proposed rule, in § 21.193(f), would omit the words “aircraft converted from” to clarify that any previously

type-certificated aircraft would be excepted from this requirement if there was no appreciable change in the external configuration.

Proposed § 21.193(h) would require applicants for an experimental certificate under § 21.191(i) operating former light-sport category aircraft, and § 21.191(j) operating light-sport category kit-built aircraft, to demonstrate compliance with the aircraft noise limits in 14 CFR part 36. If compliance cannot be demonstrated using analytical data (i.e., the aircraft needs to be flight tested), an applicant for either of these experimental purposes would need to obtain an experimental airworthiness certificate for the purpose of showing compliance with regulations to complete noise testing before receiving airworthiness certification under the proposed § 21.191(i) or (j). Options for noise compliance are discussed in section IV.K.

#### 7. Changes to the Experimental Purpose of Market Survey

Section 21.195(b) applies to manufacturers of aircraft engines and § 21.195(c) applies to persons who have altered the design of a type-certificated aircraft. Both § 21.195(b) and (c) have the requirement for an aircraft, before alteration, to have been type certificated in the normal, utility, acrobatic, commuter, or transport category. This proposed rule would add aircraft type certificated in the primary and restricted categories. This change would allow, for example, a manufacturer or person to alter an aircraft, such as by adding a new crop sprayer and install it in an aircraft that had been, before alteration, type certificated in the restricted category for the special purpose operation of crop spraying. This manufacturer or person could demonstrate the new crop sprayer on a restricted category aircraft to potential customers under the experimental purpose of market survey. Currently, § 21.195 does not contain requirements applicable to these types of demonstrations in the primary and restricted categories.

Section 21.195(d) states that an applicant for an experimental certificate under this section is entitled to that certificate if, in addition to meeting the requirements of



§ 21.193, the applicant has established an inspection and maintenance program for the continued airworthiness of the aircraft and showed that the aircraft has been flown for at least 50 hours, or for at least 5 hours if it is a type-certificated aircraft which has been modified. The FAA may reduce these operational requirements if the applicant provides adequate justification. This proposed rule would clarify that § 21.195(a), (b), or (c) determine the eligibility for the application of an airworthiness certificate for the experimental purpose of market survey and that § 21.195(d) is not a stand-alone eligibility criterion. To remedy this common misconception, this rule would clarify that § 21.195(d) only applies when an applicant meets the requirements of § 21.193 and any of the three criteria in § 21.195(a), (b), or (c).

In addition to the changes previously discussed, this rule proposes to eliminate the use of gender-specific terminology that exists in this section.

#### 8. Noise Requirements

##### a. New Experimental Light-Sport Category Aircraft and Acoustic Changes to Existing Experimental Light-Sport Aircraft

This rule proposes that new experimental light-sport aircraft and existing experimental light-sport aircraft that are altered in a manner that changes their noise generation would be required to demonstrate compliance with part 36. While the noise limits listed in the appendices to part 36 would apply, the FAA is proposing different methods of compliance depending on the complexity of the aircraft and the availability of noise consensus standards. A more comprehensive discussion of the need for this requirement and the options available for airworthiness certification is presented in section IV.K.

Aircraft certificated under current § 21.191(i)(1) would be excepted from meeting noise requirements, as discussed in section IV.K.

## b. Experimental Light-Sport Category Kit-Built Aircraft

The FAA proposes to apply the noise requirements of part 36 to experimental light-sport aircraft kit-built aircraft when an airworthiness certificate is applied for under § 21.191(j). The applicability and methods of compliance with part 36 are fully discussed in section IV.K.

### 9. Aircraft Identification

In § 21.182(a), this rule would change the word “his” to “the” to make this sentence gender-neutral.

When combined, the current § 21.182(b) introductory text and (b)(2) contain double-negative language that is confusing. This rule would eliminate the double-negative language to add clarity. Section 21.182(b) currently states in part that paragraph (a) of this section does not apply to applicants for the following: an experimental certificate for an aircraft not issued for the purpose of operating amateur-built aircraft, operating primary kit-built aircraft, or operating light-sport aircraft. To apply this double-negative language correctly, a person would have to determine the experimental purposes not listed in § 21.182(b)(2). These purposes include research and development, showing compliance with regulations, crew training, exhibition, air racing, and market survey. The proposed § 21.182(b)(2) would instead list these applicable experimental purposes, making comprehension much easier.

A new experimental purpose, operating former military aircraft, would be included under § 21.182(b)(2), thereby excluding these aircraft from compliance with the fireproof identification marking requirements of § 45.11. Former military aircraft were built under U.S. or foreign military requirements, and it would be impractical and extremely costly for them to have to retroactively comply with civil fireproof identification marking requirements. Also, most former military aircraft currently operating under FAA airworthiness certificates are already excluded from fire-proof

marking requirements since they tend to operate under the experimental purposes of research and development, crew training, or exhibition.

## J. Restricted Category

### 1. General Changes to Airworthiness Certification of Restricted Category Aircraft

For type certification in the restricted category, § 21.25(a)(1) currently requires an aircraft to meet the airworthiness requirements of an aircraft category, except those requirements that the FAA finds inappropriate for the special purpose for which the aircraft is to be used. This proposed rule would specify that the airworthiness regulations for primary or light-sport categories are not acceptable for type certification in the restricted category. These two categories were created after the restricted category regulations were established and were not intended to be included for type certification in the restricted category.

Additionally, the airworthiness requirements for primary and light-sport categories are not appropriate for use in restricted category type certification. The primary category airworthiness regulations are not designed to include all of the airworthiness standards in part 23 or 27, as applicable, while the airworthiness requirements for light-sport category aircraft, as proposed in this rule, are based on the design, performance, and production requirements in part 22. This revision would preclude owners of primary category aircraft and light-sport category aircraft from seeking certification of their aircraft in the restricted category. Currently, the FAA is not aware of any owners of primary category aircraft or light-sport category aircraft that have requested their aircraft to be certificated in the restricted category. As such, this proposed rule would result in the airworthiness regulations for normal, utility, acrobatic, commuter, and transport categories to be acceptable for use under the proposed restricted category provisions in § 21.25(a)(1).

Also in this proposed rule, the term “special purpose” would be replaced with “special purpose operation” in § 21.25(a)(1) and (2). This change would standardize the use of this terminology throughout §§ 21.25, 21.185, and 91.313 and FAA Order 8110.56B, Restricted Category Type Certification, dated July 19, 2017 (“FAA Order 8110.56B”).

In general, § 21.25(a)(2) addresses requirements for military aircraft that could be type certificated in the restricted category. This proposed rule would restructure § 21.25(a)(2) by splitting this section into three requirements, of which the latter two are new. This restructuring would make this section easier to read. In this proposed rule, the phrase, “an Armed Force of the United States,” would be replaced with “the U.S. Armed Forces” to align with terminology used throughout 14 CFR part 21. Section 21.25(a)(2)(i) would contain the existing requirement that the aircraft type was manufactured in accordance with the requirements of, and accepted for use by, the U.S. Armed Forces.

To be eligible for restricted category type certificate under proposed § 21.25(a)(2)(ii), an aircraft type must have been operated by a U.S. Armed Force since this provision is intended for former aircraft types of a U.S. Armed Force. Aircraft that have only been manufactured for and accepted by a U.S. Armed Force, but never operated by that U.S. Armed Force, could have been manufactured and accepted on behalf of other operators such as under foreign military sales arrangements and, therefore, not truly be an aircraft type of a U.S. Armed Force.

Proposed § 21.25(a)(2)(iii) would clarify that an aircraft must be able to perform, or be modified to be able to perform, the special purpose operation for which the aircraft is to be approved. Under the current § 21.25(a)(2), the requirements for what modifications are permitted or required for type certification are not specified. This has produced misconceptions that the aircraft can only be modified for special purpose operation. Surplus military aircraft may be type certificated to perform a special purpose

operation without any modification. Alternatively, modifications may be made for other reasons, such as aircraft performance, reliability, or safety enhancements.

## 2. Codification of Special Purpose Operations

The existing list of special purpose operations in § 21.25(b)(1) through (7) that are authorized for restricted category aircraft have largely remained unchanged since 1964 (see 29 FR 14564, October 24, 1964). This proposed rule would revise § 21.25(b) by codifying the special purpose operations that have been approved by the FAA since 1964. Most of these special purpose operations have been published in FAA Order 8110.56B.

In this proposed rule, § 21.25(b)(1) through (7) would continue to contain the seven special purposes currently in § 21.25(b)(1) through (7) that include: agricultural, forest and wildlife conservation, aerial surveying, patrolling, weather control, aerial advertising, and other, as specified by the FAA. Additionally, the associated special purpose operations for each special purpose would be codified. For example, cloud seeding would be a special purpose operation under the special purpose of weather control. This change would align terminology in § 21.25(b) with that used by the FAA in the approvals for special purpose operations published in the *Federal Register*. This change would also align this terminology with that used in the certification basis section of type certificate data sheets and supplemental type certificates, as well as with FAA policy in Order 8110.56 for restricted category aircraft.

For § 21.25(b)(1), this rule would add three agricultural special purpose operations that have been previously approved by the FAA: insect control, dust control, and fruit drying and frost control. Frost control and fruit drying, also called protection of crops, involve the use of an aircraft to circulate air over a field or orchard to prevent frost from forming on the crops or to dry the fruit on the orchard trees.

For § 21.25(b)(2), this rule would codify forest and wildlife conservation special purpose operations that have been previously approved by the FAA. These include aerial

dispensing of fire-fighting materials, fish spotting, wild animal survey, and oil spill response. The special purpose of aerial dispensing of fire-fighting materials was originally approved as “aerial dispensing of liquids” for fire-fighting aircraft. However, this rule proposes to change the name to aerial dispensing of fire-fighting materials to more closely align with the regulatory language in 14 CFR 36.1.

For § 21.25(b)(3), this rule would codify aerial surveying special purpose operations that include: aerial imaging, gas exploration, atmospheric survey and research, geophysical and electromagnetic surveys, oceanic surveys, and airborne measurement of navigation signals. Gas exploration would be added as a special purpose operation since it uses the same processes as the special purpose operation of oil exploration, which has existed since 1964.

Aerial imaging would replace photography as an aerial surveying special purpose operation to clarify that specialized airborne sensing or measuring equipment on the aircraft is a key component to perform aerial surveying operations. Aerial imaging would permit new technologies used to perform aerial surveying operations, such as light detection and ranging, which is commonly known as LIDAR.

For § 21.25(b)(4), this rule would codify patrolling special purpose operations that include: patrolling of railroads, patrolling of harbors, and patrolling of data transmission lines and towers. Patrolling of data transmission lines and towers is a new special purpose operation that would be added to this rule because it involves a similar process used for the special purpose operation of patrolling power lines, which has existed since 1964.

Finally, for § 21.25(b)(7), this rule would codify other special purpose operations that have been previously approved by the FAA but are not categorized under the prior six special purposes. The following special purpose operations would be added to § 21.25(b)(7): rotorcraft external-load operations conducted under part 133, carriage of

cargo incidental to the owner's or operator's business, target towing, search and rescue operations, glider towing, Alaskan fuel hauling, Alaskan fixed-wing external load operations, and space vehicle launch support. This rule would move the existing catchall, "any other special purpose operation specified by the FAA," to become the last item in the list to indicate that the FAA may still add special purpose operations in the future.

### 3. Corrections to Original Issuance of Restricted Category Airworthiness Certificates

Section 21.185(a) states that an applicant for the original issue of a restricted category airworthiness certificate for an aircraft type certificated in the restricted category, that was not previously type certificated in any other category, must comply with the appropriate provisions of § 21.183. In this proposed rule, § 21.185(a) would be revised to remove "original issue of" because "original" specifies compliance with the applicable requirements of § 21.183 only for the original issuance of a restricted category airworthiness certificate. This causes confusion in situations wherein a restricted category aircraft's airworthiness certificate has to be re-issued. For example, a restricted category aircraft may require re-issuance of the airworthiness certificate in situations where the airworthiness certificate was lost or had become unreadable due to damage. This proposed revision would account for both original and re-issuance of a restricted category airworthiness certificate.

Section 21.185(b) states that an applicant for a restricted category airworthiness certificate for an aircraft type certificated in the restricted category that was either a surplus aircraft of the Armed Forces or previously type certificated in another category is entitled to an airworthiness certificate if the aircraft has been inspected by the FAA and found to be in a good state of preservation and repair and in a condition for safe operation. Section 21.185(b), as proposed, would be restructured to provide clarity and implement terminology changes that align with the language used in other sections of this chapter. For example, this section would add "entitled to an airworthiness certificate" in

the first sentence to align with other sections of part 21, subpart H. Consistent with the changes previously discussed in § 21.25, terminology such as “special purpose operation” and “U.S. Armed Forces” would be used in § 21.185(b)(1) and (b)(2)(ii) respectively. Exclusion of aircraft previously type-certificated in categories other than primary and light-sport is proposed in § 21.185(b)(2)(ii) and would be similar to the exclusion proposed as discussed in the preamble for § 21.25(a)(1).

In addition to the changes previously discussed, this rule proposes to eliminate the use of gender-specific terminology that exists in this section.

#### 4. Issuance of Multiple Airworthiness Certificates for Restricted Category Aircraft

This proposal would revise the heading of § 21.187 by adding “for restricted category aircraft” to clarify that this section applies only to restricted category aircraft.

#### K. Noise Certification of Aircraft that Do Not Conform to a Type Certificate

The FAA is proposing to amend the applicability of 14 CFR part 36 to make noise certification applicable to aircraft that do not conform to a type certificate. Since noise certification requirements have historically only been applied to type-certificated aircraft, this rulemaking proposes the addition of a new § 36.0 for aircraft that do not conform to a type certificate to keep the requirements clearly separated. Part 36 would apply on the effective date of the final rule. Compliance would be required when a new special airworthiness certificate is applied for, or by the continued use of a previously issued airworthiness certificate when an alternation is made to an aircraft that would affect the amount of noise it produces when operating. The noise certification requirements proposed for an aircraft that does not conform to a type certificate would not be retroactive for any aircraft currently operating.

##### 1. Noise Certification Background

Pursuant to its authorizing legislation in 49 U.S.C. 44715, the FAA has the responsibility to “protect the public health and welfare from aircraft noise.” This



responsibility came with broad authority to adopt regulations and noise standards to carry out this mandate. When promulgated in the 1970s, the FAA applied the part 36 noise certification regulations when the agency issued type certificates. This represented the provision in section 44715(a)(3) that acts as the “floor” for the FAA’s duty to exercise its authority. The agency’s much broader authority over aircraft noise remains discretionary.

Initially, the FAA determined that there was little value in assessing the noise from aircraft that did not receive type certificates. Those aircraft were originally found to be few in number, and in many cases may have been a single aircraft of its kind. The agency did not find value in requiring noise testing by single operators, nor any value in the test data from a single model of an aircraft that was allowed only limited operations; these were often categorized under the general heading of experimental airworthiness certificates.

In the past two decades, the reality of the number of aircraft operating that do not conform to a type certificate has overtaken those historical presumptions. There are now tens of thousands of aircraft that do not conform to type certificates, many of them nearly identical, that have never been subject to noise testing or limits, including aircraft that may be similar to or larger than aircraft with type certificates that are already subject to the noise requirements. The FAA did not anticipate the growth of aircraft that do not conform to type certificates when the categories were created, and the noise requirements did not keep pace with this growth of these categories because they were based on historical use and expectations. The FAA can no longer justify the exclusion of these aircraft and their noise impact on communities under its statutory responsibility, nor can it let the growth continue by changing the names or the categories. The purpose of this rulemaking is to reorganize the issuance of special airworthiness certificates to reflect the current realities of certification, and it presents the opportunity to recognize and address the noise created by these aircraft. This proposed expansion of the applicability of part 36

acknowledges that noise certification is part of the overall certification scheme for aircraft and is appropriate for modernization as the agency modernizes its issuance of special airworthiness certificates.

The intent of this expansion of the applicability of part 36 is focused on those categories and classes of aircraft that represent the more recent expansion, rather than the aircraft that were traditionally excepted from noise regulations. Aircraft that would remain excepted from part 36 applicability include those traditionally determined experimental, for example the proposed categories of research and development, showing compliance, market survey, exhibition, air racing, and amateur-built aircraft. Aircraft holding airworthiness certification or seeking a new special airworthiness certificate in these categories would not be included in part 36 applicability.

Part 36 would not apply to light-sport category aircraft or experimental light-sport category aircraft as long as their airworthiness certificate was issued before the effective date of the final rule and for as long as the aircraft remains unaltered. However, any aircraft that would be certificated for the first time under proposed § 21.190 would be subject to noise requirements of part 36 at all weights. Part 36 would also apply to a current light-sport category aircraft that incorporates an alteration that would routinely be considered as requiring evaluation of the change for noise in accordance with § 21.93(b). That regulation is known as the “acoustical change” provision. However, because § 21.93 only applies to type-certificated aircraft the FAA finds the provision would not be appropriate for aircraft that have no type certificate since they have no original noise basis from which to evaluate a change. In the proposed regulation, this type of change is referenced as an alteration that would result in an acoustical change. In the context of an aircraft that does not have a type certificate, such alteration would likely be made by the airworthiness certificate holder for their single aircraft. If an aircraft incorporates such an alteration, it would be the responsibility of the airworthiness certificate holder to comply

with the requirements of part 36 for its aircraft, possibly for the first time. For the purposes of discussion here, such alterations almost always include a change in engine or propellers, a change in the wing structure or material, significant additions to the fuselage or fixed landing gear, increases in operating weight, and the attachment of external equipment. Those alterations that incorporate a change that would reduce the noise level created by the aircraft may also require a demonstration of compliance with part 36, as it would establish a new baseline for future changes.

**Table 6. Summary of § 36.0 applicability to aircraft that do not conform to a type certificate**

<b>Aircraft Certificated Under</b>	<b>Aircraft applicability</b>	<b>Applicable Noise Regulation</b>	<b>Means of Compliance</b>
14 CFR 21.190 (through § 22.175)	New aircraft or Acoustic alteration of aircraft	Part 36 (§36.0)	FAA-approved consensus standard, applicable part 36 appendix, or other combination of requirements as approved by the FAA
14 CFR 21.191 (i) Operating former light-sport category aircraft; or (j) Operating light-sport category kit-built aircraft (through § 21.193(h))	New experimental light-sport category aircraft kits or Acoustic alteration of experimental light-sport category aircraft	Part 36 (§36.0)	FAA-approved consensus standard, applicable part 36 appendix or other combination of requirements as approved by the FAA

## 2. What Noise Certification Does and Does Not Mean

Although traditional noise certification of aircraft may evoke impressions of burdensome testing and the potential for noise operating limitations in certain areas, this is often not the case. Neither comprehensive testing nor operating limitations are

automatic when part 36 applies. At present, the only noise operating limitations in the United States apply to jet aircraft.

The primary emphasis on controlling aircraft noise is done by assessing noise at its source, the aircraft itself, rather than operations generally. This assessment occurs when noise is measured at the time of type certification. Through the creation of noise limits for various aircraft types and the development of measurement procedures and methods that are relevant to day-to-day operation, the FAA meets its primary statutory obligation to protect the public health and welfare by assessing the noise profiles of aircraft as they are developed, and by setting a defined noise limit with which an aircraft must comply before it is given an airworthiness certificate and permitted to operate. The limits are set based on weight, design, and means of propulsion. There are a set of standards and limits for fixed wing small airplanes, one for jets, one for helicopters, and one for tiltrotors. As new aircraft types develop, the FAA gathers the appropriate data to determine what is acceptable for noise production by the aircraft type to fulfill the agency's statutory responsibilities. These standards and their adoption into regulations are how the FAA meets its obligation to protect public health and welfare from aircraft noise is appropriately and consistently administered.

The noise certification requirements of part 36 are integrated into the larger aircraft type and airworthiness certification processes that assess safety. However, there is one significant difference between safety and noise certification. Safety is maintained by continual assessment of aircraft condition, and the FAA can address and require correction of an unsafe condition by means such as an airworthiness directive, which is a legally enforceable regulation adopted in accordance with 14 CFR part 39. No such monitoring or correction mechanism by the FAA exists for noise. This difference places significant emphasis on the comprehensive evaluation of noise on a level playing field at the one time the noise is measured at certification. Since nothing in the regulations

specifies any particular means to control the noise of an individual aircraft, the level playing field is maintained by specific test measurements of aircraft noise at certification, one of demonstrating compliance and equal enforcement of the standards. Part 36 requires that the noise limits and reference conditions in part 36 be maintained when demonstrating compliance, even if varied procedures are approved.

Until now, noise certification has been required only for aircraft that conform to a type certificate, although it is considered an airworthiness characteristic of an individual aircraft. As discussed earlier, the expansion of the domestic fleet to include routine operations of aircraft that are not type certificated has caused the FAA to re-evaluate its statutory responsibility and respond to the increased noise burden from aircraft of all kinds. As is required by the FAA's statutory mandate, the existing limits and procedures for noise certification have been developed in a manner that considers the economic reasonableness, technological practicability, and appropriateness for the aircraft to which it would apply.<sup>125</sup> These criteria also guided the expansion of the noise certification requirements proposed here.

Noise certification is also a different and separate process from the FAA's assessment of the environmental impacts of noise when operating, especially in certain localities. Such considerations are assessed separately under different statutory and regulatory criteria than noise certification, e.g., the National Environmental Policy Act<sup>126</sup> and other special purpose laws. While these environmental impacts often refer to noise data gathered during part 36 noise testing, the noise measurements themselves are made under separate FAA authority as noted.

As stated earlier, the noise certification process does not itself create operational restrictions. Instead, each type of aircraft has a noise limit established in part 36. Noise

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<sup>125</sup> 49 U.S.C. 44715(b).

<sup>126</sup> 42 U.S.C. 4321 *et seq.*

certification is a two-step process used to test an individual aircraft (or model) using the procedures of part 36. The first step is to measure the noise levels created by an aircraft at different operating points. The second step is to determine whether the noise levels measured during testing are below the regulatory noise limit, demonstrating that the aircraft complies with part 36. Since it does not require any specific technology or equipment be installed on an aircraft, part 36 functions as a performance standard; the test shows that as configured, an aircraft is below or above the regulatory limit. Noise certification is considered part of the overall airworthiness of an aircraft (§21.183), even if the noise levels of an aircraft are, in many cases, established at the time of type certification for the convenience of the manufacturer (e.g., §21.17). The regulations require that each individual aircraft remains compliant with the noise standards, indicating that noise compliance is tied to the airworthiness certificate of an individual aircraft as it maintains compliance (see §§21.93, 21.183).

As noted, there are no specific aircraft equipment requirements to demonstrate compliance with part 36. An aircraft may incorporate any equipment desired to stay below the noise limit established for that aircraft. An aircraft that demonstrates compliance with part 36 must of course meet the airworthiness requirements for safety as configured when noise tested. Since aircraft noise is correlated to weight, noise certification tests are conducted at the maximum takeoff weight (MTOW) allowed by the airworthiness regulations for an aircraft. When an aircraft at MTOW demonstrates that it remains below the noise limits in part 36, that maximum weight for safe operation becomes an inherent noise limitation (e.g., part 36, appendix B, section B36.7(b)(6)). If an aircraft is altered in a way that it becomes louder, it results in an acoustical change, and fairness requires that the aircraft be re-assessed for its noise compliance because the noisiest certificated configuration has changed (§21.93(b)).

For large aircraft used in scheduled passenger flight operations, the requirements for noise testing cover various operating modes such as takeoff, flyover and approach. In essence, the noise certification regulations become more sophisticated for aircraft that are larger, heavier, more powerful, and more complex. But for aircraft that are smaller and lighter, the certification criteria are likewise simpler, such as a noise level measured at takeoff at maximum allowed weight, or at a level overflight condition. Part 36 uses such configurations during noise certification to represent the flight segments that generally have the most noise impact. Historically, these measurement points were adopted to represent aircraft flight segments that are most noticeable by people on the ground.

Noise certification is best viewed as a continuum, and despite that aircraft noise is assessed according to weight and measured noise output, the continuum has historically included only aircraft that sought type certification. That historical application is changing. The FAA's reassessment of its statutory obligations and the realities of how aircraft get certificated for operation has led to the expansion of part 36 applicability proposed here. This overall modernization of airworthiness qualifications and categories in part 21 present a unique opportunity for the FAA to modernize its noise responsibilities within the framework of the various aircraft certification processes that allow operation with or without type certificates. The FAA is aware that type certification has long been avoided in part to skirt the noise regulations. The FAA recognizes that its historical limitation of noise certification to type-certificated aircraft has come to represent a failing of the agency's duty to protect the public health and welfare from aircraft noise as Congress intended.

As noise certification expands to cover aircraft that do not have type certificates, the FAA is open to consideration of different procedures and certification paths that will both meet its statutory obligations and allow for less burdensome and more streamlined

compliance for newly affected airworthiness certificate holders. Those compliance mechanisms are proposed in § 36.0.

The first step in current noise certification process is the determination of the appropriate certification basis. Typically, the FAA determines which existing part 36 category applies to the aircraft, depending on its design and expected operation. Once the part 36 category is determined, the next step is to determine the noise limits and methods of compliance (reference conditions and test procedures) from the corresponding subpart and appendices of part 36. The applicant would then develop a noise certification test plan that includes these methods, get the plan approved by the FAA, conduct the required noise measurements, and submit its noise certification report for the FAA's review and approval. Together these steps constitute the applicant's demonstration of compliance.

For aircraft that do not conform to a type certificate, this proposed rule introduces more flexibility for the methods of compliance. Nothing has changed for aircraft that apply for a type certificate that are required to show compliance under existing regulations. Nothing about this proposal for aircraft that do not conform to a type certificate is intended to change the status of those that are type certificated. Type certification applicants should not expect that they will get a choice to use alternate regulatory procedures or industry consensus standards even though the name of an aircraft category in part 21 may change as part of this proposed rule. Nothing about these proposed regulations may be interpreted to alter the current noise certification limits or test requirements for type-certificated aircraft.

### 3. Aircraft not Subject to Part 36 Noise Certification Requirements

Aircraft that historically have been designated experimental, that remain few in number, are of limited use, or an aircraft that represents an early stage of continuing design would continue to be excepted from part 36 applicability. These aircraft are issued special airworthiness certificates for experimental purposes as described in § 21.191(a)



for research and development, § 21.191(b) for showing compliance, § 21.191(c) for crew training, § 21.191(d) for exhibition, § 21.191(e) for air racing, § 21.191(f) for market survey.

The FAA considered the inclusion of applying part 36 requirements to §§ 21.191(h) (primary category kit-built aircraft) and 21.191(g) (amateur-built aircraft). However, since this rulemaking is intended to streamline only the categories of aircraft discussed in this proposed rule, those aircraft are not among the proposed changes to airworthiness certification requirements and have not been included in this proposed application of part 36.

The FAA considered applying part 36 requirements to § 21.191(k) (former military aircraft). However, these aircraft are expected to remain few in number and of limited use, and their numbers are not expected to increase significantly in the future. Accordingly, this rule does not propose application of part 36 to these aircraft.

The FAA requests comment on whether any categories of aircraft should or should not be subject to part 36 noise requirements, including any technical or economic data that support the comment.

#### 4. Proposed Applicability

Proposed § 36.0 would apply to all aircraft that do conform to a type certificate and apply for an airworthiness certificate in accordance with §§ 21.190, 21.191, or 21.193(h) or part 22 with exceptions listed in the rule. This rulemaking does not affect the noise certification or operation of unmanned aircraft and they are not included in the proposed applicability of part 36. Section 36.0(a) lists the general compliance requirements applicable to each aircraft that does not conform to a type certificate. That paragraph states that the noise regulations of part 36 would apply at the time an applicant submits an application for the first certificate of airworthiness for an aircraft. For an aircraft that already has an airworthiness certificate, noise compliance would take effect

when an alteration to the aircraft is made that would affect the noise level it creates, as discussed earlier.

Section 36.0(b) states what an applicant must show to demonstrate noise compliance. First, an applicant must demonstrate the aircraft, usually in its noisiest operating configuration, produces less noise than the limit specified for an aircraft of its kind and weight in part 36. The number that results from the test is called the aircraft's noise level and it must be no louder than the part 36 noise limit. The second part of demonstrating compliance concerns the test procedures and analyses that may be required (depending on the aircraft), and a determination that they conform to the requirements in part 36 for the aircraft type, meeting the level playing field referenced earlier in the noise background discussion. Each of these two requirements must be met during each configuration, flight profile or reference condition that is determined to apply to the noise certification plan for the aircraft. The simpler an aircraft is, the simpler the test plan would be expected to be.

Section 36.0(c) lists the first method of compliance that would be available to an aircraft that does not conform to a type certificate, the use of a noise consensus standard. This is the first time the FAA has proposed to allow a noise consensus standard to be used for initial noise certification,

In past noise type certification projects, industry has occasionally requested the use of equivalency procedures or methods, including modeling, as an alternative to the noise measurement procedures in part 36. These methods typically have been proposed to demonstrate "no acoustic change" rather than be used for an initial demonstration of compliance with a part 36 noise limit. These methods are heavily scrutinized by the FAA, especially if they are new and novel, and have only been accepted on a single project basis.

The FAA expects new noise consensus standards to be developed by the industry for use by manufacturers of aircraft and kits, and by individuals. Before a consensus standard could be used to demonstrate initial compliance with part 36 for an aircraft that does not conform to a type certificate, the standard would have to be approved by the FAA and use part 36 noise limits. The FAA expects that any consensus standards would not be limited to physical measurements of noise taken during test flights. They might instead be based on empirical data or analytical modeling if the underlying noise prediction methods are found to be robust.

In evaluating new noise consensus standards to be used to demonstrate compliance with § 36.0, the FAA expects to consider the following factors:

(1) The methods in the standard, whether based in physical noise testing or through validated and/or generally accepted noise prediction methods, must be environmentally responsible, economically reasonable, technologically practicable, and appropriate for the aircraft to which it would apply;

(2) The standard must consider developments in other associated fields (such as research programs into quantification and control of aircraft noise) and participation by stakeholders;

(3) The noise levels generated from using the standard must be within 90 percent of confidence limits and must be within +/-2 decibels A (dBA) when compared to results from using the full noise measurement procedures in the corresponding appendix of part 36; and

(4) The standard must clearly document all assumptions used in the development, validation, results, and limitations of the methods presented.

A modeling-based consensus standard would be expected to significantly reduce the cost of noise compliance. Not only would there not be a need to physically test every model (or aircraft), it would also allow manufacturers to use the predictive capabilities to

guide and support aircraft design decisions in earlier phases, avoiding costly future redesign or modifications.

Accordingly, proposed § 36.0(c) would allow the use of a consensus standard for an aircraft that does not conform to a type certificate when the standard has been approved by the FAA, and the FAA finds that the standard is appropriate for the aircraft and applies to the specific design. The agency anticipates that manufacturers of aircraft or kits will work to get such noise consensus standards developed as an added value for its products, and to facilitate compliance at an early stage. The FAA does not develop noise consensus standards. If there is no approved noise consensus standard available and appropriate to the aircraft of an applicant seeking a special airworthiness certificate, another means of demonstrating compliance with part 36 would be required.

Section 36.0(d) lists the methods of compliance with part 36 available for an aircraft that does not have an applicable noise consensus standard. The first determination is whether the aircraft is found by the FAA for noise purposes to be the same as or sufficiently similar to a type-certificated aircraft covered by § 36.1. If the FAA finds there is such a type-certificated aircraft, then (1) the applicant for a special airworthiness certificate may choose to retest its aircraft using the same part 36 standards that apply to the type-certificated aircraft, or (2) if the applicant's aircraft has had no modifications that would affect the noise levels measured for the same or similar type-certificated aircraft, the applicant can adopt the noise levels recorded for the type-certificated aircraft. These are the provisions found in proposed § 36.0(d)(1)(i) and (ii). In some cases, this may be an advantage to an aircraft that does not conform to a type certificate. The FAA is aware that there are aircraft that once conformed to a type certificate but have been modified, or that the owner voluntarily chose to restrict their operation to qualify for a special airworthiness certificate. If the applicant can show that the aircraft had not been altered in a manner that would change its noise profile, the applicant would be able to use

the noise certification for the type-certificated aircraft as its demonstration of compliance, and no further action would be necessary; this method is sometimes referred to as benchmarking. This would be true for jet airplanes, small propeller-driven airplanes, small helicopters, and tiltrotors that have been type certificated and demonstrated compliance with part 36.

Alternatively, if the FAA finds that the applicant's aircraft is not the same or similar to an aircraft noise certificated under § 36.1, the applicant can demonstrate noise compliance using the noise requirements determined by the FAA to be appropriate for the aircraft. This provision, § 36.0(d)(2), is intended to allow the agency the maximum flexibility in finding an acceptable combination of requirements that are appropriate for the aircraft presented. The FAA will be able to build a noise compliance basis for an aircraft using parts of current regulations in part 36, regulations in part 36 that are no longer used for new certifications, accepted noise compliance standards that are not published in part 36 (such as those applicable to single aircraft model), and portions of accepted noise consensus standards. The noise limits established in part 36 would still apply, but the method of compliance would consist of tests or analyses that work for a particular aircraft, while allowing for the whole of the noise compliance basis to be assessed according to the statutory mandate for economic reasonableness and technological practicability. This kind of flexibility is not available under § 36.1 for type-certificated aircraft. It is designed to assist applicants for special airworthiness certificates, especially for new aircraft designs that do not fit neatly into historical categories.

As an example, the FAA would allow the use of test procedures found in appendix F to part 36 for simple propeller-driven airplanes. The procedures in appendix F have not been available to type certification applicants since 1988, when the regulations were updated to account for larger and more sophisticated small airplanes, and for the

technology available to measure their noise more accurately. Appendix F contains simpler procedures and less sophisticated equipment, such as one tripod mounted microphone underneath a flight track.

#### 5. Compliance with Part 36 Not Required

Aircraft issued an experimental airworthiness certificate in accordance with § 21.191(a) through (h) or (k) would be exempted from meeting the requirements of part 36. To account for balloons, gliders and possibly other specialized aircraft that have no or limited noise sources, proposed § 36.0(e)(2) exempts aircraft which, if type certificated, would not be required to demonstrate compliance with part 36.

Aircraft that were airworthiness certificated under § 21.191(i)(1) would be excepted from meeting noise requirements of part 36. These are aircraft that exceeded the scope of part 103, and for which § 21.191(i)(1) was created, providing a temporary window for obtaining an experimental airworthiness certificate. That window closed in 2008. Although treated as experimental light-sport category aircraft, these aircraft do not meet any accepted consensus standard for certification as light-sport category aircraft and were not delivered under a light-sport category aircraft manufacturer's statement of compliance. These aircraft have little in common with other light-sport category aircraft other than the name. No aircraft will be added to this group, and no demonstration of compliance with part 36 is considered necessary.

Overall, airworthiness certification for an aircraft that do not conform to a type certificate is intended to be simpler than for type-certificated aircraft. The process of noise certification for an aircraft that does not conform to a type certificate is intended to be simpler as well, with lower costs for manufacturers and for owners that introduce significant alterations to their aircraft. The traditional processes of demonstrating compliance to noise requirements can be complex, requiring technical skills and experience with acoustic measurement that most aircraft owners do not have. Conducting

such testing using accredited professional services can also be expensive. Moreover, the best noise performance is often achieved by informed decisions early in the design process rather than by later design additions or modifications. Like the noise certification basis for type-certificated aircraft, the FAA must approve the applicable noise compliance standards for an aircraft before it is tested, or the applicant risks the tests and data being deemed unusable for demonstrating compliance with part 36. But the addition of consensus standards and the application of other methods of demonstrating compliance proposed here are all intended to create a simpler, less restrictive process while maintaining the FAA's mandate to protect the public health and welfare. The FAA invites comments on the proposed expansion of noise applicability detailed here, including the exclusion of certain aircraft, including any data or economic impact information that supports the comment.

#### 6. Other Amendments to Part 36

The FAA is proposing to amend other sections of part 36 to include references to aircraft that do not conform to a type certificate where the requirements would apply.

Section 36.3, Compatibility with airworthiness requirements, would be amended by breaking the applicability into two paragraphs for type-certificated aircraft and aircraft that do not conform to a type certificate. The balance of the current section would be designated as paragraph (b) and would apply to all aircraft in paragraph (a). No changes to any of the requirements are proposed.

Section 36.1501, Procedures, noise levels, and other information, would be amended by adding a sentence indicating that aircraft that does not conform to a type certificate would have to include the noise levels achieved during airworthiness certification in the Pilot's Operating Handbook rather than the flight manual required for type-certificated aircraft. No changes to the requirements of the section are proposed.

Section 36.1581, Manuals, markings, and placards, would be amended by adding a new paragraph (h) to describe the requirements for an aircraft that does not conform to a type certificate. The new paragraph indicates that for aircraft subject to § 21.190(e) or § 21.191, compliance with part 36 must be documented as described in those paragraphs. The section also includes a statement that no operating limitations are prescribed as part of part 36 certification, and that no other operating limitations designated for an aircraft by other regulations are affected. The actual operating limitations statement is included in the new paragraph (h) because the current paragraph of § 36.1581 where it appears applies only to type-certificated aircraft.

#### L. Proposed Effective and Compliance Dates

The FAA proposes to require compliance with all proposals on the effective dates of the rule. Except for the following, the FAA proposes an effective date of 2 months after publication of the final rule. The FAA proposes an effective date 6 months after publication of the final rule for proposed amendments that would require new or revised consensus standards for compliance; this effective date would apply to amending-

- Section 1.1 removing the term “light-sport aircraft,”
- Section 21.190 concerning the issue of a special airworthiness certificate for light-sport category aircraft,
- Paragraph (j) of § 21.191 for the issuance of experimental airworthiness certificates for the experimental purpose of operating light-sport category kit-built aircraft,
- Paragraph (l) of § 91.319 for operating limitations applicable to experimental light-sport aircraft, and
- Section 91.327 for operating limitations applicable to light-sport category aircraft.

The FAA understands that, although development of these consensus standards may commence based on this NPRM, consensus standards bodies need final rule



requirements to finalize means of compliance within their consensus standards. This effective date would also provide time for manufacturers to complete fabrication and assembly of light-sport category aircraft and experimental light-sport aircraft kits that started under current rules. The FAA also proposes an effective date 6 months after publication of the final rule for 14 CFR 65.107(d) to provide time for revision or development of training for certification of repairman (light-sport) to align with the Mechanic Airman Certification Standards. The FAA requests comments on whether the above proposal to establish an effective date 6 months after publication of the final rule for proposed amendments that would require new or revised consensus standards for compliance would appropriately balance enabling compliance to new provisions as soon as practical with the need for additional time to revise consensus standards, complete fabrication and assemble of aircraft that started under current rules, determine compliance with new requirements, and revise of training for certification of repairman (light-sport).

M. Amendments Concerning Import and Export of Aircraft

The FAA proposes to amend § 21.183(d)(2) to enable acceptance of an inspection performed by a foreign maintenance organization to support imports of used aircraft from countries with which the United States has a bilateral agreement that includes acceptance of imported aircraft. This proposal would align regulatory text with the intent expressed in the preamble when § 21.183(d)(2) was last amended.

This proposal would revise § 21.327 to require that an applicant for an export certificate of airworthiness for an aircraft must be an owner of that aircraft and the aircraft must be registered in the U.S. The current regulation states that any person may apply for an export airworthiness approval and does not require that the aircraft be registered in the U.S. This proposal would preclude persons from exporting aircraft for which they are neither the owner nor the owner's agent. Furthermore, by requiring that

the aircraft is registered in the U.S., this proposal would allow the aircraft to be under the regulatory authority of the U.S. before export.

The proposed revision to § 21.329(a)(1) concerning requirements for the issuance of an export certificate of airworthiness would remove the word “airworthiness” to clarify that a new or used aircraft manufactured under subpart F or G of the part would need to meet all applicable requirements under subpart H of the part, and not just those requirements that may apply to airworthiness. Subpart H contains requirements for items other than airworthiness, such as requirements for aircraft registration and identification.

#### N. Conforming Amendments

This proposed revision would restructure § 21.175(a) and (b) to improve readability. Also, proposed § 21.175(a) would be revised to simplify the existing regulatory text by individually listing specific categories of type-certificated aircraft. Proposed revisions to § 21.175(b) would clarify that aircraft receiving primary, restricted, provisional, and limited category airworthiness certificates are also type certificated in their respective categories. This section would also clarify that special airworthiness certificates are issued for aircraft operating for experimental purposes.

The FAA proposes amendments to parts 43 and 65 to make sure that existing text is consistent with the proposed changes in this NPRM. The first proposed change is to § 43.1. It updates the cross reference in § 43.1(b)(2) from § 21.191(i)(3) to proposed § 21.191(i) to retain the applicability of part 43 to aircraft issued an experimental airworthiness certificate for the purpose of operating former light-sport category aircraft. The second change is to § 65.109. It updates the cross references in § 65.109(a)(2) and (b)(2) to proposed § 21.191(i) and (j) to identify the privileges and limitations of repairman (light-sport). The FAA notes that the requirements set forth in proposed § 65.109 are currently in § 65.107. The purpose of these changes is to make sure that the intent of the proposed amendments discussed in this NPRM carries through to parts 43

and 65. These amendments do not, in and of themselves, make substantive changes to the rule. Rather, they are conforming changes to effectuate the changes discussed earlier in this document

## **V. Regulatory Notices**

Federal agencies consider impacts of regulatory actions under a variety of executive orders and other requirements. First, Executive Order 12866 and Executive Order 13563, as amended by Executive Order 14094 (“Modernizing Regulatory Review”), direct that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify the costs. Second, the Regulatory Flexibility Act of 1980 (Public Law 96-354) requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Trade Agreements Act of 1979 (Public Law 96-39) prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United States. In developing U.S. standards, this 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 (Public Law 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 that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of \$100,000,000 or more (adjusted annually for inflation) in any one year. The current threshold after adjustment for inflation is \$177,000,000, using the most current (2022) Implicit Price Deflator for the Gross Domestic Product. The FAA has provided a regulatory impact analysis (RIA) in the docket for this rulemaking. This portion of the preamble summarizes the FAA's analysis of the economic impacts of this rule.

In conducting these analyses, the FAA has determined that this rule: (1) will generate benefits that justify costs; (2) is not an economically “significant regulatory

action” as defined in section 3(f) of Executive Order 12866; (3) may have a significant economic impact on a substantial number of small entities; (4) will not create unnecessary obstacles to the foreign commerce of the United States; and (5) will not impose an unfunded mandate on State, local, or tribal governments, or on the private sector.

#### A. Regulatory Impact Analysis

##### 1. Baseline for the Analysis

The baseline for the analysis of incremental benefits and costs of the proposed rule includes existing regulations and standards, existing practices, affected entities, and current safety and environmental risks. The FAA promulgated the existing regulations for light-sport category aircraft in 2004. These specifications and certification requirements reflect small, simple, easy-to-fly aircraft for sport, recreation, and experimental purposes with small range. The FAA also works with industry in developing consensus standards for light-sport category aircraft, as well as reviews the consensus standards periodically.

The FAA amended its airworthiness standards for small type-certificated aircraft in 2016. The standards provide risk-based divisions for airplanes with a maximum seating capacity of 19 passengers or less and a maximum takeoff weight of 19,000 pounds or less. Type-certificated aircraft must meet existing standards for aircraft noise. Currently, noise standards are not applied to light-sport aircraft in the United States.

The proposed rule may affect aircraft manufacturers to the extent that they design and manufacture the types of aircraft for which the performance-based or noise standards would apply. The FAA identified 54 (25 U.S. and 29 foreign) active manufacturers of light-sport aircraft and 74 models produced since 2020 (35 from U.S. and 39 from foreign manufacturers). In 2022, there were also almost 7,000 active sport pilots and 250 new light sport repairman certificates.

In 2022, there were seven fatal accidents resulting in 10 fatalities, as well as 46 nonfatal accidents, involving previously defined special light-sport aircraft. There were also 28 fatal accidents and 97 nonfatal accidents, resulting in 43 fatalities and 23 serious injuries, involving amateur-built aircraft. The FAA does not have data on baseline noise profiles of light-sport aircraft; however, FAA noise standards are technology-following (i.e., aircraft with current noise-reduction technology would successfully meet requirements).

## 2. Benefits

The benefits of the proposed rule would include the value of changes in safety and environmental risks, as well as recreational values. The proposed rule could reduce risks associated with light-sport category aircraft to the extent that the relaxation of certain requirements spurs changes that make these aircraft safer to fly. The performance-based rules could also enhance safety by enabling attractive alternatives to amateur-built aircraft that do not meet 14 CFR or consensus standards. Given the value of reducing fatalities (e.g., \$11.8 million Value of Statistical Life, or VSL) and injuries (e.g., fraction of VSL, or \$1.2 million for serious injury), a relatively small reduction in baseline risk could generate substantial benefits.

The proposed rule will likely not lead to significant noise reductions. Most current light-sport aircraft designs would not require modifications to meet the noise standards. The proposed rule will, however, prevent the introduction of obsolete, overly loud technology into the light-sport aircraft fleet or modification of such existing aircraft that would increase noise above the limit. Because the FAA cannot predict the amount of technology backsliding that could occur in the absence of the rule, it cannot quantify these benefits.

The proposed rule could also increase recreational values associated with light-sport aircraft, either through increased value of current activity or increased activity

levels. For example, greater access to newer technology, safer planes, or improved flying experience could increase unit values and the level of participation. Sport pilots would also be able to fly certain model planes that currently do not meet the definition of light-sport aircraft, including some that they may have used in training. However, the FAA does not have data on baseline recreational values or how they may increase under the proposed rule.

### 3. Costs

The FAA estimated that the proposed rule could result in incremental compliance costs for design and production and noise certification (Table 7). The FAA does not have data to estimate incremental costs or cost savings for design and production. For noise certification, costs are most likely to be minimal under the assumption that manufacturers will comply using industry consensus standards employing modeling-based methods. This assumption is supported by FAA research showing that existing SAE standards for predicting light propeller-driven aircraft noise have a potential for further development into a modeling-based consensus standard tool. As an upper bound, the FAA also calculated costs using the test-based methods in the applicable 14 CFR part 36 appendix. Upper bound costs for the industry as a whole may be in the range of \$700,000 one-time and \$100,000 annually. One-time costs are to certify all existing light-sport category aircraft and experimental light-sport aircraft models; annual costs would depend on the number of new models developed in the future.

**Table 7. Summary of Total Compliance Costs**

<b>Category</b>	<b>One-time (Existing Models)</b>	<b>Annual (New Models)</b>
Noise certification	Minimal <sup>1</sup> to \$700,000 <sup>2</sup>	Minimal <sup>1</sup> to \$100,000 <sup>2</sup>
1. Reflects industry compliance using consensus standards. Costs inherent in design. 2. Reflects industry compliance using the applicable 14 CFR part 36 appendix. One-time (nonrecurring) costs based on FAA Registry data on models produced since 2020 (although manufacturers may not continue production of all models). Annual costs based on new model development rate (models eligible to receive previously defined special light-sport aircraft airworthiness certificates) since 2004.		

The FAA does not anticipate more than minimal incremental costs for other provisions of the proposed rule, such as training. For example, course providers of training for a light-sport repairman would need to revise courses so they contain content on aircraft that could be newly included in that class of aircraft. However, these providers already must update their training manuals every two years. The FAA's acceptance, however, would no longer expire after two years, and the FAA estimates that the net incremental impacts of these changes would likely be minimal. The FAA also does not have data to estimate any cost savings, such as could result from operating certain light-sport category aircraft in aerial work which may be less costly than the airplanes currently being used.

#### 4. Summary

The proposed rule largely expands opportunities in the light-sport aircraft sector. These expansions may result in safety and recreational benefits; there may also be associated design and production costs and cost savings. The proposed rule would also apply 14 CFR part 36 noise standards to this sector, preventing obsolete, overly loud technology from being introduced into the light-sport aircraft fleet. The FAA expects that compliance with the noise standards would be minimal using industry consensus standards. As an upper bound, the FAA also calculated costs using the applicable 14 CFR part 36 appendix. Upper bound costs for the U.S. industry as a whole may be in the range of \$700,000 to certify all existing models for continued production, and approximately \$100,000 per year to certify newly developed models based on the current model production rate. The FAA does not anticipate more than minimal incremental costs for other provisions of the proposed rule, such as training. The FAA also does not have data to estimate any cost savings, such as could result from operating certain light-sport category aircraft in aerial work for compensation.

Please see the Preliminary Regulatory Impact Analysis available in the docket for more details.

## B. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) of 1980, Public Law 96–354, 94 Stat. 1164 (5 U.S.C. 601–612), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (Public Law 104–121, 110 Stat. 857, Mar. 29, 1996), and the Small Business Jobs Act of 2010 (Public Law 111–240, 124 Stat. 2504 Sept. 27, 2010), requires Federal agencies to consider the effects of the regulatory action on small business and other small entities and to minimize any significant economic impact. The term “small entities” comprises small businesses and not-for-profit organizations that are independently owned and operated and are not dominant in their fields, and governmental jurisdictions with populations of less than 50,000.

The FAA is publishing this Initial Regulatory Flexibility Analysis (IRFA) to aid the public in commenting on the potential impacts to small entities from this proposal. The FAA invites interested parties to submit data and information regarding the potential economic impact that would result from the proposal. The FAA will consider comments when making a determination or when completing a Final Regulatory Flexibility Analysis.

An IRFA must contain the following:

- (1) A description of the reasons why the action by the agency is being considered;
- (2) A succinct statement of the objective of, and legal basis for, the proposed rule;
- (3) A description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply;
- (4) A description of the projected reporting, recordkeeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities



which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record;

(5) An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap, or conflict with the proposed rule; and

(6) A description of any significant alternatives to the proposed rule which accomplish the stated objectives of applicable statutes, and which minimize any significant economic impact of the proposed rule on small entities.

### 1. Reasons the Action is Being Considered

As described elsewhere in this preamble, the FAA is considering this proposal to expand and enable innovation in the classes of aircraft that may be certificated using consensus standards as light-sport category aircraft, including emerging aircraft types; remove prescriptive weight limits that hinder incorporation of safety-enhancing designs and equipage; enable more robust aircraft for the pilot training environment; enable increased capacities for passengers, fuel, and cargo; enable electric propulsion; and enable faster, higher-performing aircraft more suitable for personal travel. Together, the FAA intends for these proposals to enhance safety by enabling attractive alternative to amateur-built aircraft that do not meet 14 CFR or consensus standards. As also described elsewhere in this preamble, the FAA is requiring that light-sport category aircraft and experimental light-sport aircraft (except amateur-built) comply with 14 CFR part 36 noise standards because it has reconsidered its responsibility to protect the public health and welfare from aircraft noise.

The FAA is proposing to expand privileges for sport pilots and light-sport repairmen, and update limitations for experimental aircraft, to align with these changes. There are also smaller amendments to related rules for experimental aircraft, restricted category aircraft, and aircraft marking.

The FAA is also codifying statutory language in section 44740 to enable certain aircraft with an experimental certificate to conduct space support vehicle flights without an air carrier certificate or exemption.

## 2. Objectives and Legal Basis of the Proposed Rule

As also described elsewhere in this preamble, the objectives of the proposed rule are to enhance the safety, performance, and operating privileges for light-sport category aircraft, including increasing suitability for flight training, limited aerial work, and personal travel, while continuing to enable the manufacture of safe and economical certificated aircraft. This NPRM also includes proposals to amend the special purpose operations for restricted category aircraft; amend the duration, eligible purposes, and operating limitations for experimental aircraft; and add operating limitations applicable to experimental aircraft engaged in space support vehicle flights to codify statutory language. Section III of this preamble describes the FAA's authority to issue rules on aviation safety.

## 3. Description and Estimate of the Number of Small Entities

FAA used the definition of small entities in the RFA for this analysis. The RFA defines small entities as small businesses, small governmental jurisdictions, or small organizations. In 5 U.S.C. section 601(3), the RFA defines "small business" to have the same meaning as "small business concern" under section 3 of the Small Business Act. The Small Business Act authorizes the Small Business Administration (SBA) to define "small business" by issuing regulations.

SBA has established size standards for various types of economic activities, or industries, under the North American Industry Classification System (NAICS). These size standards generally define small businesses based on the number of employees or annual receipts. Table 8 shows the SBA size standards for example industrial

classification codes relevant for the proposed rule. Note that the SBA definition of a small business applies to the parent company and all affiliates as a single entity.

**Table 8. Small Business Size Standards: Air Transportation**

NAICS Code	Description	Size Standard
336411	Aircraft Manufacturing	1,500 employees
336412	Aircraft Engine and Engine Parts Manufacturing	1,500 employees
336413	Other Aircraft Part and Auxiliary Equipment Manufacturing	1,250 employees
NAICS = North American Industry Classification System		

As described in the Regulatory Impact Analysis, the FAA estimated that there may be approximately 25 active US manufacturers of light-sport category aircraft and experimental light-sport aircraft that would have to comply with noise standards under the proposed rule. These entities may meet the size standard for a small business.

#### 4. Projected Reporting, Recordkeeping, and Other Compliance Requirements

Section V.E of this preamble discusses the recordkeeping and reporting requirements of the proposed rule. As described in that section, these requirements represent only minor revisions of existing requirements. Section IV.K. of the preamble describes the requirements for compliance with noise standards. As described in that section, and the Regulatory Impact Analysis, the FAA expects that compliance costs will be minimal through use of industry consensus standards. As an upper bound, the FAA also estimated the cost of noise certification testing under applicable appendices to 14 CFR part 36. There may also be incremental costs for design and production, depending on the model and needed changes. The FAA does not have data to estimate these impacts.

Using industry consensus standards, the FAA estimates that per manufacturer costs for noise certification would be minimal. In the event that manufacturers pursue noise certification testing, the estimated costs for U.S. manufacturers to certify existing models represent an average of one model per manufacturer. Based on the estimated upper bound testing cost of \$20,000 per model, Table 9 shows these costs as a percentage of average receipts for companies of different small sizes. Because the one-time costs are

nonrecurring, any impacts would occur only in the testing year. Not all manufacturers will develop new models every year, but impacts associated with new model development would be the same as shown in the table for existing models and only occur in the testing year.

**Table 9. Example Compliance Costs**

<b>Entity Size Category (Number of employees)</b>	<b>Average Annual Receipts per Entity (Millions)<sup>1</sup></b>	<b>Ratio of Noise Certification Costs/Receipts<sup>2</sup></b>
<5	\$0.7	Minimal to 2.9%
5-9	\$1.9	Minimal to 1.1%
10-14	\$3.1	Minimal to 0.6%
50-74	\$28.3	Minimal to 0.1%
150-199	\$49.4	Minimal to 0.04%
500-749	\$131.3	Minimal to 0.02%

1. Source for receipts: 2017 County Business Patterns and Economic Census ([https://www2.census.gov/programs-surveys/susb/tables/2017/us\\_state\\_naics\\_detailedsizes\\_2017.xlsx](https://www2.census.gov/programs-surveys/susb/tables/2017/us_state_naics_detailedsizes_2017.xlsx)). Adjusted for inflation using the Consumer Price Index. Based on NAICS 336411.  
2. Minimal estimate based on compliance using industry consensus standards. Upper bound estimate based on noise certification testing for an average of 1 model per entity (\$20,000).

5. All Federal Rules that May Duplicate, Overlap, or Conflict

There are no relevant Federal rules that may duplicate, overlap, or conflict with the proposed rule.

6. Significant Alternatives Considered

The FAA considered two alternatives to applying the noise standards in 14 CFR part 36 to light-sport category aircraft. The FAA considered the no action alternative in which noise standards do not apply to light-sport category aircraft. The FAA determined, however, that this alternative is not consistent with its responsibility to “protect the public health and welfare from aircraft noise.”

The FAA also considered applying the noise standards to operating amateur-built aircraft [experimental certificates issued per 14 CFR 21.191(g). Manufacturers of kits for experimental amateur-built aircraft have no requirement to meet any FAA design or manufacturing standard or industry consensus standards. This alternative could

potentially have required additional manufacturers<sup>127</sup> to undergo noise testing. The FAA did not select this alternative.

### C. International Trade Impact Assessment

The Trade Agreements Act of 1979 (Public Law 96-39), as amended by the Uruguay Round Agreements Act (Public Law 103-465), prohibits Federal agencies from establishing standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Pursuant to these Acts, the establishment of standards is not considered an unnecessary obstacle to the foreign commerce of the United States, so long as the standard has a legitimate domestic objective, such as the protection of safety, and does not operate in a manner that excludes imports that meet this objective. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards. The FAA has assessed the potential effect of this proposed rule and determined that it would respond to a domestic safety objective and would not be considered an unnecessary obstacle to trade.

### D. Unfunded Mandates Assessment

Title II of the Unfunded Mandates Reform Act of 1995 (Public Law 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 (in 1995 dollars) in any 1 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 \$177 million in lieu of \$100 million. This proposed rule does not contain such a mandate; therefore, the requirements of Title II of the Act do not apply.

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<sup>127</sup> Only one manufacturer since 2020 has requested that the FAA evaluate their aircraft kit for eligibility in meeting the "major portion" requirement of 14 CFR 21.191(g) (see [faa.gov/aircraft/gen\\_av/ultralights/amateur\\_built/kits/media/amateur\\_built\\_kit\\_listing.pdf](https://www.faa.gov/aircraft/gen_av/ultralights/amateur_built/kits/media/amateur_built_kit_listing.pdf)).

## E. Paperwork Reduction Act

The Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) requires that the FAA consider the impact of paperwork and other information collection burdens imposed on the public. According to the 1995 amendments to the Paperwork Reduction Act (5 CFR 1320.8(b)(2)(vi)), an agency may not collect or sponsor the collection of information, nor may it impose an information collection requirement unless it displays a valid Office of Management and Budget (OMB) control number.

This proposed rule contains amendments to the existing information collection requirements approved under OMB Control Numbers 2120-0018, 2120-0022, 2120-0690, and 2120-0730. As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), the FAA has submitted these proposed information collection amendments to OMB for its review.

### 1. Summary

The FAA is proposing to amend rules for the manufacture, certification, operation, maintenance, and alteration of light-sport category aircraft. Certificate holders required to comply would experience the following conforming revisions to existing information collection activities:

**Table 10. Summary of Conforming Revisions**

Control Number	Revisions
2120-0018	<p>FAA Form 8130-6, Application for U.S. Airworthiness Certificate:</p> <ul style="list-style-type: none"><li>• Update the “LIGHT-SPORT” field to accommodate any aircraft class</li><li>• Update the “RESTRICTED” field to add newly codified operations</li><li>• Update the “EXPERIMENTAL” field to add new purpose for operating former military aircraft</li><li>• Add provision for attaching evidence of compliance with 14 CFR part 36 and include the tested noise levels of the aircraft and include the following statement: “No determination has been made by the Federal Aviation Administration that the noise levels of this aircraft are or should be acceptable or unacceptable for operation in any location.” FAA Form 8130-15, Light Sport Aircraft Statement of Compliance:</li><li>• Update the “Check applicable items” field to change the 14 CFR reference for kits, accommodate any aircraft class, and indicate whether the aircraft meets eligibility requirements in part 61 for a sport pilot</li><li>• Update the “FAA Applicable Accepted Standard(s)” and corresponding “Manufacturer’s Documentation” fields to reflect new requirements for</li></ul>

**Table 10. Summary of Conforming Revisions**

Control Number	Revisions
	noise, manufacturer’s training requirements, optional simplified flight controls, and optional aerial work • Add a statement concerning acceptable aerial work operations • Revise statement(s) to remove references to 14 CFR definition of light-sport aircraft and include new statements required by this rule • Include new requirements of § 21.190(f)(3), (4), and (5) for an amended statement of compliance. • Update the certifying statement field to add training/certification credentials for the person signing the form Add provision for the manufacturer of light-sport category aircraft to notify the FAA and owners of aircraft it manufactured in advance of discontinuance of its continued operational safety program or transfer of its execution to another responsible party.
2120-0022	FAA Form 8610-3, Airman Certificate and/or Rating Application – Repairman: • Change the certificate title from repairman certificate (light-sport aircraft) to repairman certificate (light-sport) • Use the term “Aircraft Category” in place of “LSA Class” and list the following aircraft categories: airplane, rotorcraft, glider, lighter-than-air, powered-lift, powered parachute, and weight-shift control aircraft
2120-0690	FAA Form 8710-11, Airman Certificate and/or Rating Application (previously part of OMB Control Number 2120-0690): • Update the “Application Information” field to accommodate any aircraft class, and to specify whether the aircraft meets requirements for simplified flight controls • Update the “Record of Pilot Flight Time” field to accommodate any aircraft class
2120-0730	14 CFR 91.417, Maintenance Records - Status of SLSA Safety Directives: • Cancelled (compliance no longer mandatory)

2. Use

The FAA will use the revised information collections for oversight activities in relation to the proposed rule including compliance and data analysis.

3. Respondents (Including Number of)

Revisions to OMB Control Numbers 2120-0018, 2120-0022, and 2120-0069 reflect minor form revisions (Table 1) that would have no impact on the number of respondents in the approved collections.

The cancellation of OMB Control Number 2120-0730 would remove the burden from 3,224 respondents as identified in the approved collection.

#### 4. Frequency

The revisions to OMB Control Numbers 2120-0018, 2120-0022, and 2120-0069 would also have no impact on the frequency of collection requirements in the approved collections.

The cancellation of OMB Control Number 2120-0730 would remove this information collection activity entirely.

#### 5. Annual Burden Estimate

The annual burden estimates in the OMB Control Numbers 2120-0018, 2120-0022, and 2120-0069 are unchanged from the approved collections.

The burden estimated for OMB Control Number 2120-0730 would be eliminated (6,488 annual burden hours).

The agency is soliciting comments to—

- (a) Evaluate whether the proposed information requirement is necessary for the proper performance of the functions of the agency, including whether the information will have practical utility;
- (b) Evaluate the accuracy of the agency's estimate of the burden;
- (c) Enhance the quality, utility, and clarity of the information to be collected; and
- (d) Minimize the burden of collecting information on those who are to respond, including by using appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology.

Individuals and organizations may send comments on the information collection requirement to the address listed in the **ADDRESSES** section at the beginning of this preamble by [INSERT DATE 90 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. Comments also should be submitted to the Office of Management and Budget, Office of Information and Regulatory Affairs, Attention: Desk



Officer for FAA, New Executive Building, Room 10202, 725 17th Street, NW,  
Washington, DC 20053.

#### F. International Compatibility

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to conform to International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. However, proposals in this NPRM concern aircraft that are issued special airworthiness certificates for domestic operations. As such, these aircraft are not required to be found to meet ICAO standards and recommended practices as required for aircraft that engage in international air navigation. The FAA notes that multiple aviation authorities have established provisions for the certification of light-sport category aircraft. Requirements among these authorities share similarities for enabling the certification of small aircraft for recreation. However, the specific eligibility parameters for certification as light-sport category aircraft; design, performance, and production requirements; and certification procedures are not harmonized among these authorities. The FAA understands that European Aviation Safety Agency requires the use of the noise standards in ICAO Chapter 16 Volume I. This rule would not require the use of ICAO Chapter 16 Volume I for these aircraft. Regardless of particular differences among national civil aviation authorities for the certification of light-sport category aircraft, proposals in this NPRM generally align with recent rulemaking in Brazil and the European Community in enabling increased safety and performance of these aircraft.

#### G. Environmental Analysis

FAA Order 1050.1F, Environmental Impacts: Policies and Procedures, identifies FAA actions that may be categorically excluded from preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act in the absence of extraordinary circumstances. In accordance with FAA Order

1050.1F, paragraph 5-6.6(f), the FAA has determined that this notice of proposed rulemaking qualifies for a categorical exclusion and does not involve extraordinary circumstances.

## **VI. Executive Order Determinations**

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

The FAA has analyzed this proposed rule under the principles and criteria of Executive Order 13132, Federalism. The agency has determined that this action would not have a substantial direct effect on the States, or the relationship between the Federal 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.

### **B. Executive Order 13175, Consultation and Coordination with Indian Tribal**

#### **Governments**

Consistent with Executive Order 13175, Consultation and Coordination with Indian Tribal Governments,<sup>128</sup> and FAA Order 1210.20, American Indian and Alaska Native Tribal Consultation Policy and Procedures,<sup>129</sup> the FAA ensures that Federally Recognized Tribes (Tribes) are given the opportunity to provide meaningful and timely input regarding proposed Federal actions that have the potential to affect uniquely or significantly their respective Tribes. Currently, the FAA has not identified any unique or significant effects, environmental or otherwise, on Tribes resulting from this proposed rule.

### **C. Executive Order 13211, Regulations that Significantly Affect Energy Supply,**

#### **Distribution, or Use**

The FAA analyzed this proposed rule under Executive Order 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use

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<sup>128</sup> 65 FR 67249 (Nov. 6, 2000).

<sup>129</sup> FAA Order No. 1210.20 (Jan. 28, 2004), available at [faa.gov/documentLibrary/media/1210.pdf](http://faa.gov/documentLibrary/media/1210.pdf).

(May 18, 2001). The agency has determined that it would not be a “significant energy action” under the Executive order and would not be likely to have a significant adverse effect on the supply, distribution, or use of energy.

D. Executive Order 13609, Promoting International Regulatory Cooperation

Executive Order 13609, Promoting International Regulatory Cooperation, promotes international regulatory cooperation to meet shared challenges involving health, safety, labor, security, environmental, and other issues and to reduce, eliminate, or prevent unnecessary differences in regulatory requirements. The FAA has analyzed this action under the policies and agency responsibilities of Executive Order 13609 and has determined that this action will have no effect on international regulatory cooperation.

**VII. Additional Information**

A. Comments Invited

The FAA invites interested persons to participate in this rulemaking by submitting written comments, data, or views. The FAA also invites comments relating to the economic, environmental, energy, or federalism impacts that might result from adopting the proposals in this document. Additionally, the FAA requests comment on whether the FAA should remove the definition of *consensus standard* from § 1.1 altogether or revise the definition as proposed. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. To ensure the docket does not contain duplicate comments, commenters should submit only one time if comments are filed electronically or commenters should send only one copy of written comments if comments are filed in writing.

The FAA will file in the docket all comments it receives, as well as a report summarizing each substantive public contact with FAA personnel concerning this proposed rulemaking. Before acting on this proposal, the FAA will consider all comments it receives on or before the closing date for comments. The FAA will consider

comments filed after the comment period has closed if it is possible to do so without incurring expense or delay. The FAA may change this proposal in light of the comments it receives.

#### B. Confidential Business Information

Confidential Business Information (CBI) is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to the person in the **FOR FURTHER INFORMATION CONTACT** section of this document. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

*Privacy:* In accordance with 5 U.S.C. 533(c), DOT solicits comments from the public to better inform its rulemaking process. DOT posts these comments, without edit, including any personal information the commenter provides, to regulations.gov, as described in the system of records notice (DOT/ALL-14 FDMS), which can be viewed at [dot.gov/privacy](http://dot.gov/privacy).

#### C. Electronic Access and Filing

A copy of this NPRM, all comments received, any final rule, and all background material may be viewed online at [regulations.gov](http://regulations.gov) using the docket number listed above. A copy of this proposed rule will be placed in the docket. Electronic retrieval help and guidelines are available on the website. It is available 24 hours each day, 365 days each

year. An electronic copy of this document may also be downloaded from the Office of the Federal Register's website at [federalregister.gov](http://federalregister.gov) and the Government Publishing Office's website at [govinfo.gov](http://govinfo.gov). A copy may also be found at the FAA's Regulations and Policies website at [faa.gov/regulations\\_policies](http://faa.gov/regulations_policies).

Copies may also be obtained by sending a request to the Federal Aviation Administration, Office of Rulemaking, ARM-1, 800 Independence Avenue S.W., Washington, D.C. 20591, or by calling (202) 267-9677. Commenters must identify the docket or notice number of this rulemaking. All documents the FAA considered in developing this proposed rule, including economic analyses and technical reports, may be accessed in the electronic docket for this rulemaking.

#### D. Small Business Regulatory Enforcement Fairness Act.

The Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 requires the FAA to comply with small entity requests for information or advice about compliance with statutes and regulations within its jurisdiction. A small entity with questions regarding this document may contact its local FAA official, or the person listed under the **FOR FURTHER INFORMATION CONTACT** heading at the beginning of the preamble. To find out more about SBREFA on the Internet, visit [faa.gov/regulations\\_policies/rulemaking/sbre\\_act/](http://faa.gov/regulations_policies/rulemaking/sbre_act/).

#### **List of Subjects**

##### 14 CFR Part 1

Air transportation.

##### 14 CFR Parts 21 and 22

Aircraft, Aviation safety, Exports, Imports, Reporting and recordkeeping requirements, Voluntary standards.

##### 14 CFR Part 36

Agriculture, Aircraft, Noise control.

14 CFR Part 43

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

14 CFR Part 45

Aircraft, Signs and symbols.

14 CFR Part 61

Aircraft, Airmen, Aviation safety, Incorporation by reference, Recreation and recreation areas, Reporting and recordkeeping requirements, Teachers.

14 CFR Part 65

Air traffic controllers, Aircraft, Airmen, Airports, Aviation safety, Incorporation by reference, Reporting and recordkeeping requirements.

14 CFR Part 91

Air carriers, Air taxis, Air traffic control, Aircraft, Airmen, Airports, Aviation safety, Noise control, Reporting and recordkeeping requirements, Transportation.

14 CFR Part 119

Administrative practice and procedure, Air carriers, Aircraft, Aviation safety, Reporting and recordkeeping requirements.

**The Proposed Amendment**

In consideration of the forgoing, the Federal Aviation Administration proposes to amend chapter I 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(f), 106(g), 40113, 44701.

2. Effective [DATE 6 MONTHS after date OF PUBLICATION OF THE FINAL RULE IN THE FEDERAL REGISTER], amend § 1.1 by revising the definition of “Consensus standard,” removing the definition of “Light-sport aircraft,” and adding the definitions of

“Space support vehicle” and “Space support vehicle flight” in alphabetical order to read as follows:

**§ 1.1 General definitions.**

\* \* \* \* \*

*Consensus standard* means any industry-developed standard that applies to aircraft design, operation, production, maintenance, or airworthiness, which —

(1) Has been adopted and promulgated by a standards-producing organization under procedures which provide an opportunity for input by persons interested and affected by the scope or provisions of the standard;

(2) Has been reached through substantial agreement on its adoption; and

(3) Has been accepted as a consensus standard by the FAA.

\* \* \* \* \*

*Space support vehicle* means an aircraft that is a launch vehicle, reentry vehicle, or a component of a launch or reentry vehicle.

*Space support vehicle flight* means a flight in the air that is not a launch or reentry, but is conducted by a space support vehicle.

\* \* \* \* \*

**PART 21—CERTIFICATION PROCEDURES FOR PRODUCTS AND ARTICLES**

3. The authority citation for part 21 continues to read as follows:

**Authority:** 42 U.S.C. 7572; 49 U.S.C. 106(f), 106(g), 40105, 40113, 44701-44702, 44704, 44707, 44709, 44711, 44713, 44715, 45303.

4. Revise § 21.25 to read as follows:

**§ 21.25 Issue of type certificate: restricted category aircraft.**

(a) An applicant is entitled to a type certificate for an aircraft in the restricted category for special purpose operations if the applicant shows compliance with the

applicable noise requirements of part 36 of this chapter, and if the applicant shows that no feature or characteristic of the aircraft makes it unsafe when it is operated under the limitations prescribed for its intended use, and the aircraft—

(1) Meets the airworthiness requirements of an aircraft category, other than primary category or light-sport category, except those requirements that the FAA finds inappropriate for the special purpose operation for which the aircraft is to be used; or

(2) Is of a type that—

(i) Has been manufactured in accordance with the requirements of, and accepted for use by, the U.S. Armed Forces;

(ii) Has a service history with the U.S. Armed Forces acceptable to the FAA; and

(iii) Has been found capable by the FAA of performing, or has been modified to perform, the special purpose operation for which the aircraft is to be used.

(b) Restricted category aircraft can be approved for:

(1) Agricultural use, for one or more of the following special purpose operations, including—

(i) Crop spraying, dusting, and seeding;

(ii) Livestock and predatory animal control;

(iii) Insect control;

(iv) Dust control; or

(v) Fruit drying and frost control.

(2) Forest and wildlife conservation, for one or more of the following special purpose operations, including—

(i) Aerial dispensing of firefighting materials;

(ii) Fish spotting;

(iii) Wild animal survey; or

(iv) Oil spill response.



(3) Aerial surveying, for one or more of the following special purpose operations, including—

- (i) Aerial imaging and mapping;
- (ii) Oil, gas, and mineral exploration;
- (iii) Atmospheric survey and research;
- (iv) Geophysical and electromagnetic survey;
- (v) Oceanic survey; or
- (vi) Airborne measurement of navigation signals.

(4) Patrolling, for one or more of the following special purpose operations, including

- (i) Patrolling of pipelines;
  - (ii) Patrolling of power lines;
  - (iii) Patrolling of data transmission lines and towers;
  - (iv) Patrolling of railroads;
  - (v) Patrolling of canals; or
  - (vi) Patrolling of harbors.
- (5) Weather control, including the special purpose operation of cloud seeding.
- (6) Aerial advertising, for one or more of the following special purpose

operations, including—

- (i) Skywriting;
  - (ii) Banner towing;
  - (iii) Displaying airborne signs; or
  - (iv) Public address systems.
- (7) Other special purpose operations, including—
- (i) Rotorcraft external-load operations conducted under part 133 of this chapter;
  - (ii) Carriage of cargo incidental to the owner's or operator's business;

- (iii) Target towing;
- (iv) Search and rescue operations;
- (v) Glider towing;
- (vi) Alaskan fuel hauling;
- (vii) Alaskan fixed-wing external load operations;
- (viii) Space vehicle launch support; or
- (ix) Any other special purpose operation specified by the FAA.

5. Revise § 21.175 to read as follows:

**§ 21.175 Airworthiness certificates: classification.**

(a) Standard airworthiness certificates are airworthiness certificates issued for aircraft type certificated:

- (1) In the normal, utility, acrobatic, commuter, or transport category;
- (2) As manned free balloons; or
- (3) As special classes of aircraft.

(b) Special airworthiness certificates are airworthiness certificates issued for:

(1) Aircraft type-certificated in the primary, restricted, provisional, or limited categories;

- (2) Aircraft certificated in the light-sport category;
- (3) Aircraft operating for an experimental purpose; or
- (4) Aircraft operating under a special flight permit.

6. Amend § 21.181 by revising paragraph (a) to read as follows:

**§ 21.181 Duration.**

(a) Unless sooner surrendered, suspended, revoked, or a termination date is otherwise established by the FAA, airworthiness certificates are effective as long as the aircraft is registered in the United States and as follows:

(1) Standard airworthiness certificates and special airworthiness certificates issued for aircraft certificated in the primary, restricted, or limited category are effective as long as the maintenance, preventive maintenance, and alterations are performed in accordance with parts 43 and 91 of this chapter.

(2) A special flight permit is effective for the period of time specified in the permit.

(3) A special airworthiness certificate in the light-sport category will remain effective as long as all of the following conditions are met:

(i) Except as specified in paragraph (a)(3)(iv) of this section, the aircraft meets the eligibility criteria for the issuance of an airworthiness certificate in the light-sport category specified in § 21.190(b).

(ii) The aircraft conforms to its original or properly altered configuration.

(iii) The aircraft has no unsafe condition and is not likely to develop an unsafe condition.

(iv) For aircraft originally certificated prior to [EFFECTIVE DATE OF THE FINAL RULE], and for which an amended manufacturer's statement of compliance has not been submitted to the FAA in accordance with § 21.190(e) on or after [EFFECTIVE DATE OF THE FINAL RULE], the aircraft meets all of the following conditions:

(A) A maximum takeoff weight of not more than 1,320 pounds (600 kilograms) for aircraft not intended for operation on water or 1,430 pounds (650 kilograms) for an aircraft intended for operation on water.

(B) A maximum airspeed in level flight with maximum continuous power ( $V_H$ ) of not more than 120 knots CAS under standard atmospheric conditions at sea level.

(C) A maximum never-exceed speed ( $V_{NE}$ ) of not more than 120 knots CAS for a glider.

(D) A maximum stalling speed or minimum steady flight speed without the use of lift-enhancing devices ( $V_{S1}$ ) of not more than 45 knots CAS at the aircraft's maximum certificated takeoff weight and most critical center of gravity.

(E) A maximum seating capacity of no more than two persons, including the pilot.

(F) A single, reciprocating engine, if powered.

(G) A fixed or ground-adjustable propeller if a powered aircraft other than a powered glider.

(H) A fixed or feathering propeller system if a powered glider.

(I) A fixed-pitch, semi-rigid, teetering, two-blade rotor system, if a gyroplane.

(J) A nonpressurized cabin, if equipped with a cabin.

(K) Fixed landing gear, except for an aircraft intended for operation on water or a glider.

(L) Fixed or retractable landing gear, or a hull, for an aircraft intended for operation on water.

(M) Fixed or retractable landing gear for a glider.

(4) The duration of an experimental certificate issued for research and development, showing compliance with regulations, crew training, or market survey is effective for 3 years from the date of issue or renewal unless the FAA prescribes a shorter period.

(5) The duration of an experimental certificate issued for operating amateur-built aircraft, exhibition, air-racing, operating primary kit-built aircraft, operating former light-sport category aircraft, operating light-sport category kit-built aircraft, and operating former military aircraft is unlimited, unless the FAA establishes a specific period for good cause.

\* \* \* \* \*

7. Amend § 21.182 by revising paragraphs (a) and (b)(2) to read as follows:

**§ 21.182 Aircraft identification.**

(a) Except as provided in paragraph (b) of this section, each applicant for an airworthiness certificate under this subpart must show that the aircraft is identified as prescribed in § 45.11 of this chapter.

(b) \* \* \*

(2) An experimental certificate issued for the purposes of research and development, showing compliance with regulations, crew training, exhibition, air racing, market surveys, or operating former military aircraft.

\* \* \* \* \*

8. Amend § 21.183 by:

- a. Removing the word “or” the end of paragraph (d)(2)(iii);
- b. Removing the word “and” and adding “or” in its place at the end of paragraph (d)(2)(iv); and
- c. Adding paragraph (d)(2)(v).

The addition reads as follows:

**§ 21.183 Issue of standard airworthiness certificates for normal, utility, acrobatic, commuter, and transport category aircraft; manned free balloons; and special classes of aircraft.**

\* \* \* \* \*

(d) \* \* \*

(2) \* \* \*

(v) A foreign maintenance organization appropriately certificated by an exporting authority with whose country the United States has a bilateral agreement that includes acceptance of this aircraft category by the United States for import. An acceptable inspection must have been completed while the aircraft was operated on the registry of

the exporting authority and within 60 days of submitting the application for a United States airworthiness certificate; and

\* \* \* \* \*

9. Amend § 21.185 by revising paragraphs (a) and (b) to read as follows:

**§ 21.185 Issue of airworthiness certificates for restricted category aircraft.**

(a) *Aircraft manufactured under a production certificate or type certificate.* An applicant for a restricted category airworthiness certificate for an aircraft type certificated in the restricted category, that was not previously type certificated in any other category, must comply with the appropriate provisions of § 21.183.

(b) *Other aircraft.* An applicant for an airworthiness certificate in the restricted category is entitled to an airworthiness certificate if—

(1) The aircraft is type certificated for a special purpose operation in the restricted category;

(2) The aircraft was —

(i) Manufactured in accordance with the requirements of, and accepted for use by, the U.S. Armed Forces and has a service history with the U.S. Armed Forces acceptable to the FAA; or

(ii) Previously type certificated in another category (other than primary category or light-sport category); and

(3) The aircraft has been inspected by the FAA and found to be in a good state of preservation and repair and in a condition for safe operation.

\* \* \* \* \*

10. Amend § 21.187 by revising the section heading to read as follows:

**§ 21.187 Issue of multiple airworthiness certifications for restricted category aircraft.**

\* \* \* \* \*

11. Effective [DATE 6 MONTHS after date OF PUBLICATION OF THE FINAL RULE IN THE FEDERAL REGISTER], revise § 21.190 to read as follows:

**§ 21.190 Issue of a special airworthiness certificate for a light-sport category aircraft.**

(a) *Purpose.* The FAA issues a special airworthiness certificate in the light-sport category to operate an aircraft, other than an unmanned aircraft, that meets the requirements of this section.

(b) *Eligibility.* To be eligible for a special airworthiness certificate in the light-sport category, an aircraft must meet the applicable requirements of § 22.100 of this chapter.

(c) *Application for special airworthiness certificate in the light-sport category.* Except as provided in paragraph (e) of this section, an applicant for a special airworthiness certificate under this section must provide the FAA with:

(1) The manufacturer's statement of compliance as described in paragraph (d) of this section.

(2) A pilot's operating handbook that includes—

(i) Recommended operating instructions and limitations to safely accommodate all environmental conditions and abnormal procedures likely to be encountered in the aircraft's intended operations; and

(ii) A flight training supplement to enable safe operation of the aircraft within the intended flight envelope under all foreseeable conditions.

(iii) A listing of any aerial work operations that may be safely conducted using the aircraft and any instructions and limitations that are necessary to safely conduct those operations.

(iv) A statement that the aircraft has demonstrated compliance with part 36 of this chapter, the tested noise levels of the aircraft, and the following statement: "No

determination has been made by the Federal Aviation Administration that the noise levels of this aircraft are or should be acceptable or unacceptable for operation in any location.”

(3) A maintenance and inspection program containing procedures necessary to ensure continued safe operation of the aircraft.

(4) Evidence that the aircraft has demonstrated compliance with the applicable requirements of part 36 of this chapter.

(d) *Manufacturer's statement of compliance.* The manufacturer's statement of compliance specified in paragraph (c)(1) of this section must –

(1) Be signed by the manufacturer’s authorized representative or agent who is certified and trained on the requirements associated with the issuance of a statement of compliance by an organization that certifies and trains quality assurance staff in accordance with a consensus standard that has been accepted by the FAA.

(2) Identify the aircraft by make, model, serial number, class, and date of manufacture.

(3) State whether this aircraft meets the requirements specified in subpart J of part 61 of this chapter for the exercise of privileges by a sport pilot.

(4) Specify those aerial work operations the manufacturer has determined may be safely conducted, and state that the aircraft has been ground and flight tested to ensure that it can be operated to safely conduct those operations in accordance with the instructions and limitations provided by the manufacturer.

(5) State whether the aircraft meets the requirements of § 22.180 of this chapter for simplified flight controls.

(6) Specify the consensus standards used to determine the aircraft’s compliance with subpart B of part 22 of this chapter and state that the aircraft meets the eligibility, design, production, and airworthiness requirements of subpart B of part 22 of this chapter



in accordance with those consensus standards. The specified consensus standards must be accepted by the FAA for the airworthiness certification of light-sport category aircraft.

(7) State that the aircraft conforms to the manufacturer's design data, using the manufacturer's quality assurance system that meets the specified consensus standard.

(8) State that the manufacturer will make available to any interested person the documents specified in paragraph (c) of this section.

(9) State that the manufacturer will support the aircraft by implementing and maintaining a documented continued operational safety program that—

(i) Addresses monitoring and resolving in-service safety of flight issues;

(ii) Includes provisions for the issuance of safety directives;

(iii) Includes a process for notifying the FAA and all owners of all safety of flight issues; and

(iv) Includes a process for advance notice to the FAA and all owners of a continued operational safety program discontinuance or provider change.

(10) State that the manufacturer will monitor and correct safety-of-flight issues through the issuance of safety directives and a continued operational safety program that meets the specified consensus standard.

(11) State that at the request of the FAA, the manufacturer will provide unrestricted access to its facilities and to all data necessary to determine compliance with this section or other applicable requirements of this chapter.

(12) State that the manufacturer has established and maintains a quality assurance system that meets the requirements of § 22.185 of this chapter.

(e) *Special provisions for aircraft certificated in the light-sport category before [EFFECTIVE DATE OF THE FINAL RULE].* The owner of an aircraft issued a light-sport category airworthiness certificate before [EFFECTIVE DATE OF THE FINAL RULE], may submit an amended manufacturer's statement of compliance to the FAA

listing those aerial work operations that may be conducted using the aircraft. The amended statement of compliance must –

(1) Identify the aircraft by make, model, serial number, and date of manufacture.

(2) Be made by the original manufacturer of the aircraft.

(3) Reference and reaffirm the statements made in the original manufacturer's statement of compliance.

(4) State that the design and construction of the aircraft provides sufficient structural integrity to enable safe operation of the aircraft during the performance of the specified aerial work operations and that the aircraft is able to withstand any foreseeable flight and ground loads.

(5) Specify the FAA-accepted consensus standard used to make the determination required by paragraph (a) of this section.

(6) Is accompanied by revisions to the aircraft's operating instructions to indicate those aerial work operations that may be conducted using the aircraft, and any applicable revisions to the aircraft's maintenance and inspection procedures, and flight training supplement.

12. Amend § 21.191 by revising the section heading, introductory text, and paragraph (i) and adding reserved paragraph (j) and paragraph (k) to read as follows:

**§ 21.191 Issue of experimental airworthiness certificates.**

Experimental airworthiness certificates are issued for the following experimental purposes:

\* \* \* \* \*

(i) *Operating former light-sport category aircraft.* Operating an aircraft that previously has been issued a special airworthiness certificate in the light-sport category under § 21.190.

(j) [Reserved]

(k) *Operating former military aircraft.* Operating a former military aircraft that meets the following requirements:

(1) The aircraft is not an unmanned aircraft.

(2) The aircraft was manufactured, purchased, or modified under contract by the U.S. Armed Forces or a foreign military.

(3) The aircraft is operated for one of the following purposes:

(i) Flying the aircraft to a base where repairs, alterations, or maintenance are to be performed;

(ii) Flying to a point of storage; or

(iii) Repositioning the aircraft for use under contract with the U.S. Armed Forces.

13. Effective [DATE 6 MONTHS after date OF PUBLICATION OF THE FINAL RULE IN THE FEDERAL REGISTER], amend § 21.191 further by adding paragraph (j) to read as follows:

**§ 21.191 Issue of experimental airworthiness certificates.**

\* \* \* \* \*

(j) *Operating light-sport category kit-built aircraft.* Operating an aircraft of a type that has been certificated under § 21.190 and assembled from an aircraft kit in accordance with manufacturer's assembly instructions that meet an applicable FAA-accepted consensus standard. An applicant must provide the following:

(1) Evidence that an aircraft of the same make and model was manufactured and assembled by the aircraft kit manufacturer and issued a special airworthiness certificate in the light-sport category under § 21.190.

(2) The pilot's operating handbook that includes a flight training supplement.

(3) The aircraft's maintenance and inspection procedures.

(4) The manufacturer's statement of compliance for the aircraft kit used in the aircraft assembly that meets the applicable requirements of § 21.190 in effect at the time

the aircraft kit was manufactured, except the statement need not indicate compliance with § 22.175 of this chapter. The statement must identify assembly instructions for the aircraft that meet an applicable consensus standard.

(5) For an aircraft kit manufactured outside the United States, evidence that the aircraft kit was manufactured in a country with which the United States has a Bilateral Airworthiness Agreement concerning airplanes or a Bilateral Aviation Safety Agreement with associated Implementation Procedures for Airworthiness concerning airplanes, or an equivalent airworthiness agreement.

\* \* \* \* \*

14. Revise § 21.193 to read as follows:

**§ 21.193 Application for special airworthiness certificates issued for experimental purposes.**

An applicant for an experimental airworthiness certificate must submit the following information in a form and manner prescribed by the FAA:

- (a) The experimental purpose for which the aircraft is to be used.
- (b) Enough information to describe the operation, equipment, or test as applicable.
- (c) The estimated time or number of flights required for the operation, for an applicant seeking issuance of an experimental airworthiness certificate for those experimental purposes specified in § 21.191(a) through (f).
- (d) The areas over which flights will be conducted.
- (e) Enough data to identify the aircraft.
- (f) Except for a previously type certificated aircraft without an appreciable change in its external configuration, three-view drawings or three-view dimensional photographs of the aircraft.
- (g) Upon inspection of the aircraft, any pertinent information found necessary by the FAA to safeguard the general public.

(h) For applicants seeking certification of an aircraft for the purpose of operating former light-sport category aircraft or for the purpose of operating light-sport category kit-built aircraft, evidence of compliance with the applicable aircraft noise limits in part 36 of this chapter.

15. Amend § 21.195 by revising paragraphs (b) through (d) to read as follows:

**§ 21.195 Experimental certificates: Aircraft to be used for market surveys, sales demonstrations, and customer crew training.**

\* \* \* \* \*

(b) A manufacturer of an aircraft engine manufactured within the United States, that has altered a type certificated aircraft by installing an engine it has manufactured, may apply for an experimental certificate for that aircraft to be used for market surveys, sales demonstrations, or customer crew training, if the basic aircraft, before alteration, was type certificated in the normal, utility, acrobatic, commuter, transport, primary, or restricted category.

(c) A person who has altered the design of a type certificated aircraft may apply for an experimental certificate for an altered aircraft to be used for market surveys, sales demonstrations, or customer crew training if the basic aircraft, before alteration, was type certificated in the normal, utility, acrobatic, commuter, transport, primary, or restricted category.

(d) An applicant for an experimental certificate under paragraph (a), (b), or (c) of this section is entitled to that certificate if, in addition to meeting the requirements of § 21.193, the applicant—

(1) Has established an inspection and maintenance program for the continued airworthiness of the aircraft; and

(2) Shows that the aircraft has been flown for at least 50 hours, or for at least 5 hours if it is a type certificated aircraft which has been altered. The FAA may reduce these operational requirements if the applicant provides adequate justification.

16. Revise § 21.327 to read as follows:

**§ 21.327 Application.**

(a) Any owner of a U.S.-registered aircraft may apply for an export certificate of airworthiness for that aircraft.

(b) Any person may apply for an export airworthiness approval for an aircraft engine, propeller, or article.

(c) Each applicant must apply in a form and manner prescribed by the FAA.

17. Amend § 21.329 by revising paragraph (a)(1) introductory text to read as follows:

**§ 21.329 Issuance of export certificates of airworthiness.**

(a) \* \* \*

(1) A new or used aircraft manufactured under subpart F or G of this part meets the requirements under subpart H of this part for a —

\* \* \* \* \*

18. Add part 22 to read as follows:

**PART 22 – DESIGN, PRODUCTION, AND AIRWORTHINESS**

**REQUIREMENTS FOR NON-TYPE CERTIFICATED AIRCRAFT**

**Subpart A – General**

Sec.

22.1 Applicability.

**Subpart B – Light-Sport Category Aircraft**

22.100 Eligibility.

22.105 Control and maneuverability.

22.110 Structural integrity.

- 22.115 Powered-lift: minimum safe speed.
- 22.120 Special requirements for light-sport aircraft used for aerial work operations.
- 22.125 Environmental conditions.
- 22.130 Suitability and durability of materials.
- 22.135 Instruments and equipment.
- 22.140 Controls and displays.
- 22.145 Propulsion system.
- 22.150 Fuel system.
- 22.155 Fire protection.
- 22.160 Visibility.
- 22.165 Emergency evacuation.
- 22.170 Placards and markings.
- 22.175 Noise.
- 22.180 Special requirements for light-sport category aircraft with simplified flight controls.
- 22.185 Quality assurance system.
- 22.190 Finding of compliance by trained compliance staff.
- 22.195 Ground and flight testing.

**Authority:** 42 U.S.C. 7572; 49 U.S.C. 106(f), 106(g), 40105, 40113, 44701-44702, 44704, 44707, 44709, 44711, 44713, 44715, 45303.

## **PART 22 – DESIGN, PRODUCTION, AND AIRWORTHINESS**

### **REQUIREMENTS FOR NON-TYPE CERTIFICATED AIRCRAFT**

#### **Subpart A – General**

##### **§ 22.1 Applicability.**

(a) Except as provided in paragraph (c) of this section, this part prescribes design, production, and airworthiness requirements for the issue of special airworthiness

certificates, and changes to those certificates, for non-type certificated aircraft applying for an airworthiness certificate.

(b) Each person who applies under part 21 of this chapter for such a certificate or change must comply with the applicable requirements in this part.

(c) This part does not apply to aircraft issued an experimental airworthiness certificate, aircraft operating under a special flight permit, or unmanned aircraft.

## **Subpart B – Light-Sport Category Aircraft**

### **§ 22.100 Eligibility.**

(a) *Aircraft manufactured in the United States.* To be eligible for a special airworthiness certificate in the light-sport category issued under § 21.190 of this chapter, an aircraft must –

(1) Except for an airplane, have a maximum seating capacity of not more than two persons, including the pilot.

(2) For an airplane, have a maximum seating capacity of not more than four persons, including the pilot.

(3) Have a maximum stalling speed or minimum steady flight speed, without the use of lift-enhancing devices ( $V_{S1}$ ) at the aircraft's maximum certificated takeoff weight and most critical center of gravity of 54 knots CAS for an airplane, or 45 knots CAS for a glider or weight-shift-control aircraft.

(4) Have a maximum speed of 250 knots CAS at maximum available power under standard atmospheric conditions at sea level.

(5) Have a non-pressurized cabin, if equipped with a cabin.

(6) Not have been previously issued a standard, primary, restricted, limited, or provisional airworthiness certificate, or an equivalent airworthiness certificate by a foreign civil aviation authority.



(7) Meet the aircraft design, production, and airworthiness requirements specified in this subpart using a means of compliance consisting of consensus standards accepted by the FAA.

(8) Be inspected by the FAA and found to be in a condition for safe operation.

(b) *Aircraft manufactured outside the United States.* For aircraft manufactured outside the United States to be eligible for a special airworthiness certificate in the light-sport category under § 21.190 of this chapter, an applicant must provide the FAA evidence that—

(1) The aircraft meets the requirements of this subpart;

(2) The aircraft was manufactured in a country with which the United States has a Bilateral Airworthiness Agreement concerning airplanes or Bilateral Aviation Safety Agreement with associated Implementation Procedures for Airworthiness concerning airplanes, or an equivalent airworthiness agreement; and

(3) The aircraft is eligible for an airworthiness certificate, flight authorization, or other similar certification in its country of manufacture.

#### **§ 22.105 Control and maneuverability.**

A light-sport category aircraft must –

(a) Be consistently and predictably controllable and maneuverable through the normal use of primary flight controls at all loading conditions during all phases of flight; and,

(b) Not have a tendency to inadvertently depart controlled flight or require exceptional piloting skill, alertness, or strength.

#### **§ 22.110 Structural integrity.**

(a) The design and construction of the aircraft must provide sufficient structural integrity to enable safe operations within the aircraft's flight envelope throughout the aircraft's intended life cycle; and,

(b) The aircraft must be able to withstand all anticipated flight and ground loads when operated within its operational limits.

**§ 22.115 Powered-lift: minimum safe speed.**

To be certificated in the light-sport category, powered-lift aircraft must have a known minimum safe speed for each flight condition encountered in normal operations, including applicable sources of lift and phases of flight, to maintain controlled safe flight. The minimum safe speed determination must account for the most adverse conditions for each configuration.

**§ 22.120 Special requirements for light-sport aircraft used for aerial work operations.**

If the aircraft is designated by the manufacturer as suitable for the performance of any aerial work operation, the design and construction of the aircraft must provide sufficient structural integrity to enable safe operation of the aircraft during the performance of that operation and ensure that the aircraft is able to withstand any foreseeable flight and ground loads.

**§ 22.125 Environmental conditions.**

The aircraft must have design characteristics to safely accommodate all environmental conditions likely to be encountered during its intended operations.

**§ 22.130 Suitability and durability of materials.**

The suitability and durability of materials used for products and articles must account for the likely environmental conditions expected in service, the failure of which could prevent continued safe flight and landing.

**§ 22.135 Instruments and equipment.**

(a) The aircraft must have all instruments and equipment necessary for safe flight, to include those instruments necessary for systems control and management. The aircraft

must also include all instruments and equipment required for the kinds of operations for which it is authorized.

(b) The aircraft, instruments, equipment, and systems must perform their intended functions under all operating conditions specified in the pilot's operating handbook.

Likely failure or malfunction of a system or component must not cause loss of control of the aircraft. Systems and components must be considered separately and in relation to each other.

#### **§ 22.140 Controls and displays.**

The aircraft must be designed and constructed so that the pilot has the ability to reach all controls and displays in a manner that provides for smooth and positive operation of the aircraft.

#### **§ 22.145 Propulsion system.**

The aircraft propulsion system must —

(a) Have controls that are simple, intuitive and not confusing;

(b) Be designed so that the failure of any product or article does not prevent continued safe flight and landing or, if continued safe flight and landing cannot be ensured, the hazard has been minimized;

(c) Not exceed safe operating limits under normal operating conditions; and

(d) Have the necessary reliability, durability, and endurance for safe flight without failure, malfunction, excessive wear, or other anomalies.

#### **§ 22.150 Fuel system.**

The aircraft fuel system must—

(a) Provide a means to safely remove or isolate the fuel stored in the system from the aircraft; and

(b) Be designed to retain fuel under all likely operating conditions.

#### **§ 22.155 Fire protection.**

The hazards of fuel or electrical fires following a survivable emergency landing must be minimized by incorporating design features to sustain static and dynamic deceleration loads without structural damage to fuel or electrical system components or their attachments that would leak fuel to an ignition source or allow electrical power to become an ignition source.

**§ 22.160 Visibility.**

The aircraft must be designed and constructed so that the pilot has—

- (a) Sufficient visibility of controls, instruments, equipment, and placards; and
- (b) Sufficient vision outside the aircraft necessary to conduct safe aircraft

operations.

**§ 22.165 Emergency evacuation.**

(a) The aircraft must be designed and constructed—

(1) So that all occupants have the ability to rapidly conduct an emergency evacuation; and

(2) Except as provided in paragraph (b) of this section, to account for all conditions likely to occur following an emergency landing.

(b) Aircraft not intended for operation on water are not required to account for ditching in an emergency landing.

**§ 22.170 Placards and markings.**

The aircraft must display all placards and instrument markings necessary for safe operation and occupant warning. Markings or graphics must clearly indicate the function of each control, other than primary flight controls.

**§ 22.175 Noise.**

The aircraft must meet the applicable noise standards of part 36 of this chapter.

**§ 22.180 Special requirements for light-sport category aircraft with simplified flight controls.**

An aircraft that meets the following requirements may be designated by the manufacturer as having simplified flight controls—

(a) The aircraft allows the pilot to only control the flight path of the aircraft or intervene in its operation without direct manipulation of individual aircraft control surfaces or adjustment of the available power;

(b) The aircraft is designed to inherently prevent loss of control, regardless of pilot input; and

(c) The aircraft has a means to enable the pilot to quickly and safely discontinue the flight and prevent any inadvertent activation of this feature.

**§ 22.185 Quality assurance system.**

The aircraft must have been designed, produced, and tested under a documented quality assurance system to ensure each product and article conforms to its design and is in a condition for safe operation.

**§ 22.190 Finding of compliance by trained compliance staff.**

The aircraft must have been found compliant with the provisions of the applicable FAA-accepted consensus standards by individuals who have been trained on determining compliance with those consensus standards.

**§ 22.195 Ground and flight testing.**

The aircraft must have been ground and flight tested under documented production acceptance test procedures to –

(a) Validate aircraft performance data.

(b) Ensure the aircraft has no hazardous operating characteristics or design features.

(c) Ensure the aircraft is in a condition for safe operation.

(d) Ensure the aircraft can safely conduct any aerial work operation designated by the manufacturer in accordance with § 22.120.

**PART 36 - NOISE STANDARDS: AIRCRAFT TYPE AND AIRWORTHINESS  
CERTIFICATION**

19. The authority for part 36 continues to read as follows:

**Authority:** 42 U.S.C. 4321 *et seq.*; 49 U.S.C. 106(g), 40113, 44701-44702, 44704, 44715; sec. 305, Pub. L. 96-193, 94 Stat. 50, 57; E.O. 11514, 35 FR 4247, 3 CFR, 1966-1970 Comp., p. 902.

20. Add § 36.0 to read as follows:

**§ 36.0 Applicability; aircraft that do not conform to a type certificate.**

(a) *General applicability.* Except as provided in paragraph (e) of this section, for aircraft described in § 21.190, § 21.191, § 21.193(h), or part 22 of this chapter, that does not conform to a type certificate, the requirements of this part apply at the time of application for a first airworthiness certificate, or when an aircraft previously issued an airworthiness certificate incorporates an alteration that would result in an acoustical change.

(b) *Compliance requirements.* Compliance with this part requires –

(1) A determination that the applicable noise limits specified in this part are not exceeded for any configuration, flight profile, or reference condition required for an aircraft to demonstrate compliance; and,

(2) When applicable, a determination that any test procedures and analyses contained in a related appendix to this part have been met for any configuration, flight profile, or reference condition required.

(c) *Use of a noise consensus standard.* An aircraft that does not conform to a type certificate may demonstrate compliance using a noise consensus standard that meets the following conditions:

(1) The noise consensus standard has been approved by the FAA; and

(2) The noise consensus standard has been determined by the FAA to be appropriate for the aircraft and applicable to the aircraft's specific design.

(d) *No noise consensus standard available.* For an aircraft that does not conform to a type certificate, and for which no noise consensus standard has been approved or determined by the FAA to be appropriate for the aircraft, the following apply:

(1) *Aircraft similar to a type-certificated aircraft.* An aircraft that is determined by the FAA for noise purposes to be the same as or sufficiently similar in design to a type certificated aircraft described in §36.1 may demonstrate compliance with this part by —

(i) Using the same requirements as the type certificated aircraft that is the same or sufficiently similar in design to the aircraft; or

(ii) Adopting the noise levels for the type certificated aircraft that is the same or sufficiently similar in design to the aircraft when the aircraft has not been altered to result in an acoustical change.

(2) *Aircraft with no similar type-certificated aircraft.* If the FAA determines that for noise purposes, there is no type certificated aircraft of the same or sufficiently similar design described in § 36.1, an applicant may demonstrate compliance with this part using the noise requirements determined by the FAA to be appropriate for the aircraft.

(e) *Exceptions.* The following aircraft that do not conform to a type certificate are excepted from demonstrating compliance with the requirements of this part:

(1) Aircraft issued an experimental airworthiness certificate in accordance with § 21.191(a) through (h) or (k) of this chapter;

(2) Aircraft which, if type certificated, would not be required to demonstrate compliance with this part; and

(3) Aircraft issued an experimental airworthiness certificate in accordance with § 21.191(i)(1) of this chapter on or before January 31, 2008, for the purpose of operating a light-sport aircraft.

21. Amend § 36.1 by adding reserved paragraph (a)(6) and paragraph (a)(7) to read as follows:

**§ 36.1 Applicability and definitions.**

(a) \* \* \*

(6) [Reserved]

(7) Aircraft that do not conform to a type certificate, in accordance with § 36.0.

\* \* \* \* \*

22. Revise § 36.3 to read as follows:

**§ 36.3 Compatibility with airworthiness requirements.**

(a) Each applicant for certification under this part must demonstrate that:

(1) For type certificated aircraft, that the aircraft complies with the airworthiness regulations in this chapter that constitute the type certification basis of the aircraft under all conditions in which compliance with this part is shown; or

(2) For aircraft without a type certificate, that the aircraft complies with all airworthiness requirements in this chapter applicable to the design of the aircraft under all conditions in which compliance with this part is shown.

(b) Each applicant for certification under this part must show that any procedure used to demonstrate compliance with this part, and any procedure and information for the flight crew developed under this part, are consistent with the requirements of paragraph (a)(1) or (2) of this section.

23. Amend § 36.1501 by revising paragraph (a) to read as follows:

**§ 36.1501 Procedures, noise levels and other information.**

(a) All procedures, weights, configurations, and other information or data employed for obtaining the certified noise levels prescribed by this part, including equivalent procedures used for flight, testing, and analysis, must be developed by the applicant and approved by the FAA. For type certificated aircraft, noise levels achieved



during type certification must be included in the aircraft's approved flight manual. For aircraft without a type certificate, noise levels achieved during airworthiness certification must be included in the Pilot's Operating Handbook.

\* \* \* \* \*

24. Amend § 36.1581 by adding paragraph (h) to read as follows:

**§ 36.1581 Manuals, markings, and placards.**

\* \* \* \* \*

(h) For aircraft subject to § 36.0, no noise operating limitations are prescribed under this part, and this part does not affect any operating limitations for these aircraft described elsewhere in this chapter. Noise compliance with this part must be documented as specified in § 21.190(e) or § 21.191 of this chapter, as applicable. The noise information must:

(1) State that the aircraft has demonstrated compliance with this part;

(2) Include the demonstrated noise levels of the aircraft; and

(3) Include the following statement: No determination has been made by the Federal Aviation Administration whether the noise levels of this aircraft are or should be acceptable for operation in any location.

**PART 43—MAINTENANCE, PREVENTITIVE MAINTENANCE, REBUILDING,  
AND ALTERATION**

25. The authority citation for part 43 continues to read as follows:

**Authority:** 42 U.S.C. 7572; 49 U.S.C. 106(f), 106(g), 40105, 40113, 44701-44702, 44704, 44707, 44709, 44711, 44713, 44715, 45303.

26. Amend § 43.1 by revising paragraph (b)(2) to read as follows:

**§ 43.1 Applicability.**

\* \* \* \* \*

(b) \* \* \*

(2) Any aircraft for which the FAA has issued an experimental certificate under the provisions of § 21.191(i) of this chapter, and the aircraft was previously issued a special airworthiness certificate in the light-sport category under the provisions of § 21.190 of this chapter; or

\* \* \* \* \*

27. Amend § 43.13 by revising paragraphs (a) and (c) to read as follows:

**§ 43.13 Performance rules (general).**

(a) Each person performing maintenance, alteration, or preventive maintenance on an aircraft, engine, propeller, or appliance shall use the methods, techniques, and practices prescribed in the current manufacturer's maintenance manual or Instructions for Continued Airworthiness prepared by its manufacturer, or other methods, techniques, and practices acceptable to the Administrator, except as noted in § 43.16. That person must use the tools, equipment, and test apparatus necessary to assure completion of the work in accordance with accepted industry practices. If special equipment or test apparatus is recommended by the manufacturer involved, that person must use that equipment or apparatus or its equivalent acceptable to the Administrator.

\* \* \* \* \*

(c) Unless otherwise notified by the Administrator, the methods, techniques, and practices contained in the maintenance manual or the maintenance part of the manual of the holder of an air carrier operating certificate or an operating certificate under part 121 or 135 of this chapter and operators under part 129 of this chapter holding operations specifications (that is required by its operating specifications to provide a continuous airworthiness maintenance and inspection program) constitute acceptable means of compliance with this section.

**PART 45—IDENTIFICATION AND REGISTRATION MARKING**

28. The authority citation for part 45 continues to read as follows:

**Authority:** 49 U.S.C. 106(f), 106(g), 40103, 40113-40114, 44101-44105, 44107-44111, 44504, 44701, 44708-44709, 44711-44713, 44725, 45302-45303, 46104, 46304, 46306, 47122.

29. Amend § 45.23 by revising paragraph (b) to read as follows:

**§ 45.23 Display of marks; general.**

\* \* \* \* \*

(b) Except for unmanned aircraft, when marks include only the Roman capital letter “N” and the registration number is displayed on limited, restricted, experimental, or provisionally certificated aircraft, the operator must also display on that aircraft near each entrance to the cabin, cockpit, or pilot station, in letters not less than 2 inches nor more than 6 inches high, the words “limited,” “restricted,” “experimental,” or “provisional,” as applicable.

**PART 61—CERTIFICATION: PILOTS, FLIGHT INSTRUCTORS, AND  
GROUND INSTRUCTORS**

30. The authority citation for part 61 is revised to read as follows:

**Authority:** 49 U.S.C. 106(f), 106(g), 40113, 44701-44703, 44707, 44709-44711, 44729, 44903, 45102-45103, 45301-45302; sec. 2307, Pub. L. 114-190, 130 Stat. 615 (49 U.S.C. 44703 note).

31. Amend § 61.3 by revising the section heading and adding paragraph (m) to read as follows:

**§ 61.3 Requirement for certificates, ratings, privileges, and authorizations.**

\* \* \* \* \*

(m) *For a person who possesses a sport pilot certificate.* No person may exercise sport pilot privileges under § 61.313 unless that person receives a qualifying logbook endorsement under § 61.317 or § 61.321 for the appropriate category and class privilege.

The requirement in this paragraph (m) does not apply to a person who already holds the appropriate category and class rating on their pilot certificate.

32. Add § 61.9 to read as follows:

**§ 61.9 Inapplicability of simplified flight controls aircraft experience credit.**

Notwithstanding the requirements specified in § 61.51(c), any pilot time acquired while operating an airplane or helicopter with a simplified flight controls design and designation may not be used to satisfy the following aeronautical experience requirements for a private, commercial, or airline transport pilot certificate, except for private pilot applicants who present an aircraft with the simplified flight controls design and designation to conduct the practical test—

- (a) The solo flight time requirements in § 61.109(a)(5) or (c)(4);
- (b) The PIC flight time requirements in § 61.129(a)(2)(i) and (c)(2)(i);
- (c) The PIC flight time requirements in § 61.159(a)(5); and
- (d) The PIC flight time requirements in § 61.161(a)(3).

33. Amend § 61.31 by redesignating paragraph (l) as paragraph (m) and adding a new paragraph (l) to read as follows:

**§ 61.31 Type rating requirements, additional training, and authorization requirements.**

\* \* \* \* \*

(l) *Additional aircraft model-specific flight training.* No person may act as pilot in command of an aircraft with a simplified flight controls designation unless that person has -

- (1) Received and logged model-specific flight training in that aircraft, or in a full flight simulator or flight training device that is representative of that model-specific aircraft with the simplified flight controls designation; and

(2) Received a logbook endorsement from an authorized instructor who has found the person proficient in the safe operation of that model-specific aircraft and the associated simplified flight control system.

\* \* \* \* \*

34. Amend § 61.45 by revising the introductory text in paragraph (f) and adding paragraphs (g) and (h) to read as follows:

**§ 61.45 Practical tests: Required aircraft and equipment.**

\* \* \* \* \*

(f) *Conduct of a sport pilot practical test in an aircraft with a single seat.* A practical test for a sport pilot certificate may be conducted in an aircraft having a single seat provided that the –

\* \* \* \* \*

(g) *Aircraft with a simplified flight controls designation.* An applicant for a pilot certificate, rating, or privilege may use an aircraft with a simplified flight controls designation for a practical test if -

(1) The examiner agrees to conduct the test;

(2) The examiner holds the appropriate category and class rating or privilege, the simplified flight controls model-specific aircraft endorsement, and an appropriate FAA designation to conduct the test;

(3) The examiner is able to assume control of the aircraft at any time, except if paragraph (f) of this section applies; and

(4) After successful completion of the practical test, the applicant is issued a pilot certificate with the appropriate category and class privilege and model specific limitation.

(h) *Simplified flight controls limitation.* A person who receives a category and class rating or privilege with a simplified flight controls limitation may operate only the

specified make and model of aircraft set forth by the limitation unless the person satisfies the following requirements, as applicable:

(1) If seeking to operate another make and model of aircraft with a simplified flight controls designation in the same category and class, the person must receive training and an endorsement in accordance with § 61.31(l).

(2) If seeking to operate a different category and class of aircraft with a simplified flight controls designation or any aircraft without a simplified flight controls designation, the person must successfully complete a practical test for that category and class of aircraft.

35. Amend § 61.195 by adding paragraph (m) to read as follows:

**§ 61.195 Flight instructor limitations and qualifications.**

\* \* \* \* \*

(m) *Training in an aircraft with a simplified flight controls designation.* (1) For purposes of this paragraph (m), instructor pilot means a pilot employed or used by a manufacturer of an aircraft with a simplified flight controls designation to conduct operations of that aircraft for the purpose of providing crew training.

(2) A flight instructor may conduct flight training in an aircraft with a simplified flight controls designation without satisfying the training and endorsement requirements under § 61.31(l), provided the flight instructor—

(i) Holds a flight instructor certificate with the appropriate aircraft category, class, and type rating (if a class or type rating is required);

(ii) Has received and logged model-specific training in that aircraft from an instructor pilot for the manufacturer of the aircraft; and

(iii) Has received a logbook or training record endorsement from the instructor pilot certifying that the flight instructor is proficient in the safe operation of that model-specific aircraft and the associated simplified flight control system.

(3) Notwithstanding the requirements in § 61.3(d)(2)(ii), an instructor pilot may provide the training and endorsement specified in paragraph (m)(2) of this section in lieu of an authorized instructor.

36. Amend § 61.303 by revising the section heading and paragraphs (a) and (b)(4) to read as follows:

**§ 61.303 If I want to operate an aircraft that satisfies the limitations identified in § 61.316, what operating limits and endorsement requirements in this subpart must I comply with?**

(a) Use the following table to determine what operating limits and endorsement requirements in this subpart, if any, apply to you when you operate an aircraft that satisfies the limitations identified in § 61.316. The medical certificate specified in this table must be in compliance with § 61.2 in regards to currency and validity. If you hold a recreational pilot certificate, but not a medical certificate, you must comply with cross country requirements in § 61.101(c), even if your flight does not exceed 50 nautical miles from your departure airport. You must also comply with requirements in other subparts of this part that apply to your certificate and the operation you conduct. In the following table, when the word “aircraft” is used, it refers to aircraft that satisfy the limitations identified in § 61.316.

<b>If you hold</b>	<b>And you hold</b>	<b>Then you may operate</b>	<b>And</b>
(1) A medical certificate	(i) A sport pilot certificate,	Any aircraft for which you hold the endorsements required for its category and class,	You must hold any other endorsements required by this subpart, and comply with the limitations in § 61.315.
	(ii) At least a recreational pilot certificate with a category and class rating,	Any aircraft in that category and class,	You do not have to hold any of the endorsements required by this subpart, nor do you

			have to comply with the limitations in § 61.315.
	(iii) At least a recreational pilot certificate but not a rating for the category and class of the aircraft you operate,	That aircraft, only if you hold the endorsements required for § 61.321 for its category and class,	You must comply with the limitations in § 61.315, except § 61.315(c)(14) and, if a private pilot or higher, § 61.315(c)(7).
(2) Only a U.S. driver's license	(i) A sport pilot certificate,	Any aircraft for which you hold the endorsements required for its category and class.	You must hold any other endorsements required by this subpart, and comply with the limitations in § 61.315.
	(ii) At least a recreational pilot certificate with a category and class rating,	Any aircraft in that category and class,	You do not have to hold any of the endorsements required by this subpart, but you must comply with the limitations in § 61.315.
	(iii) At least a recreational pilot certificate but not a rating for the category and class of aircraft you operate,	That aircraft, only if you hold the endorsements required in § 61.321 for its category and class,	You must comply with the limitations in § 61.315, except § 61.315(c)(14) and, if a private pilot or higher, § 61.315(c)(7).
(3) Neither a medical certificate nor a U.S. driver's license	(i) A sport pilot certificate,	Any glider or balloon for which you hold the endorsements required for its category and class,	You must hold any other endorsements required by this subpart, and comply with the limitations in § 61.315.
	(ii) At least a private pilot certificate with a category and class rating for glider or balloon,	Any glider or balloon in that category and class	You do not have to hold any of the endorsements required by this subpart, nor do you have to comply with the limitations in § 61.315.
	(iii) At least a private pilot certificate but not a	Any glider or balloon, only if you hold the endorsements	You must comply with the limitations in § 61.315, except § 61.315(c)(14)



	rating for glider or balloon,	required in § 61.321 for its category and class.	and, if a private pilot or higher, § 61.315(c)(7).
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(b) \* \* \*

(4) Not know or have reason to know of any medical condition that would make that person unable to operate an aircraft in a safe manner.

37. Revise § 61.305 to read as follows:

**§ 61.305 What are the age and language requirements for a sport pilot certificate?**

To be eligible for a sport pilot certificate you must:

(a) Be at least 17 years old (or 16 years old if you are applying to operate a glider or balloon).

(b) Be able to read, speak, write, and understand English. If you cannot read, speak, write, and understand English because of medical reasons, the FAA may place limits on your certificate as are necessary for the safe operation of aircraft.

38. Amend § 61.307 by adding paragraphs (b)(1) and (2) to read as follows:

**§ 61.307 What tests do I have to take to obtain a sport pilot certificate?**

\* \* \* \* \*

(b) \* \* \*

(1) For persons seeking a sport pilot certificate with a rotorcraft-helicopter privilege, the applicant must complete a practical test satisfactorily demonstrating the knowledge, risk management, and skill elements for each area of operation as specified in the Sport Pilot for Helicopter – Simplified Flight Controls Airman Certification Standards, referenced in paragraph (b)(2) of this section.

(2) FAA-S-ACS-26, Sport Pilot for Helicopter – Simplified Flight Controls Airman Certification Standards, [date to be included], is incorporated by reference into this section with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. This material is available for inspection at the Federal

Aviation Administration (FAA) and the National Archives and Records Administration (NARA). Contact FAA at: Airman Testing Standards Branch/Regulatory Support Division, 405-954-4151, AFS630Comments@faa.gov, faa.gov/training\_testing. For information on the availability of this material at NARA, visit [archives.gov/federal-register/cfr/ibr-locations.html](http://archives.gov/federal-register/cfr/ibr-locations.html), or e mail: [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov). The material may be obtained from FAA, 800 Independence Avenue SW, Washington, D.C. 20591, 866-835-5322, [faa.gov/training\\_testing](http://faa.gov/training_testing).

39. Revise § 61.311 to read as follows:

**§ 61.311 What flight proficiency requirements must I meet to apply for a sport pilot certificate?**

To apply for a sport pilot certificate, you must receive and log ground and flight training from an authorized instructor on the following areas of operation, as appropriate, for airplane single-engine land or sea, glider, gyroplane, helicopter, airship, balloon, powered parachute land or sea, weight-shift-control aircraft land or sea privileges:

- (a) Preflight preparation.
- (b) Preflight procedures.
- (c) Airport, heliport, seaplane base, and gliderport operations, as applicable.
- (d) Hovering maneuvers (applicable only to helicopters).
- (e) Takeoffs (or launches), landings, and go-arounds.
- (f) Performance maneuvers and, for gliders, performance speeds.
- (g) Ground reference maneuvers (not applicable to gliders, helicopters, and balloons).
- (h) Soaring techniques (applicable only to gliders).
- (i) Navigation.
- (j) Slow flight (not applicable to lighter-than-air aircraft, helicopters, and powered parachutes).

(k) Stalls (not applicable to lighter-than-air aircraft, gyroplanes, helicopters, and powered parachutes).

(l) Emergency operations.

(m) Post-flight procedures.

40. Revise § 61.313 to read as follows:

**§ 61.313 What aeronautical experience must I have to apply for a sport pilot certificate?**

(a) *Aeronautical experience.* Use the following table to determine the aeronautical experience you must have to apply for a sport pilot certificate:

If you are applying for a sport pilot certificate with...	Then you must log at least...	Which must include at least...
(1) Airplane category and single-engine land or sea class privileges,	20 hours of flight time, including at least 15 hours of flight training from an authorized instructor in a single-engine airplane and at least 5 hours of solo flight training in the areas of operation listed in § 61.311,	(i) 2 hours of cross-country flight training; (ii) 10 takeoffs and landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport; (iii) One solo cross-country flight of at least 75 nautical miles total distance, with a full-stop landing at a minimum of two points and one segment of the flight consisting of a straight-line distance of at least 25 nautical miles between the takeoff and landing locations; and (iv) 2 hours of flight training with an authorized instructor on those areas of operation specified in § 61.311 in preparation for the practical test within the preceding 2 calendar months from the month of the test.

<p>(2) Glider category privileges, and you have not logged at least 20 hours of flight time in a heavier-than-air aircraft,</p>	<p>10 hours of flight time in a glider, including 10 flights in a glider receiving flight training from an authorized instructor and at least 2 hours of solo flight training in the areas of operation listed in § 61.311,</p>	<p>(i) Five solo launches and landings; and (ii) at least 3 training flights with an authorized instructor on those areas of operation specified in § 61.311 in preparation for the practical test within the preceding 2 calendar months from the month of the test.</p>
<p>(3) Glider category privileges, and you have logged 20 hours flight time in a heavier-than-air aircraft,</p>	<p>3 hours of flight time in a glider, including five flights in a glider while receiving flight training from an authorized instructor and at least 1 hour of solo flight training in the areas of operation listed in § 61.311,</p>	<p>(i) Three solo launches and landings; and (ii) at least 3 training flights with an authorized instructor on those areas of operation specified in § 61.311 in preparation for the practical test within the preceding 2 calendar months from the month of the test.</p>
<p>(4) Rotorcraft category and gyroplane class privileges,</p>	<p>20 hours of flight time, including 15 hours of flight training from an authorized instructor in a gyroplane and at least 5 hours of solo flight training in the areas of operation listed in § 61.311,</p>	<p>(i) 2 hours of cross-country flight training; (ii) 10 takeoffs and landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport; (iii) One solo cross-country flight of at least 50 nautical miles total distance, with a full-stop landing at a minimum of two points, and one segment of the flight consisting of a straight-line distance of at least 25 nautical miles between the takeoff and landing locations; and (iv) 2 hours of flight training with an authorized instructor on those areas of operation specified in § 61.311 in preparation for the practical test within the preceding 2 calendar months from the month of the test.</p>

<p>(5) Lighter-than-air category and airship class privileges,</p>	<p>20 hours of flight time, including 15 hours of flight training from an authorized instructor in an airship and at least 3 hours performing the duties of pilot in command in an airship with an authorized instructor in the areas of operation listed in § 61.311,</p>	<p>(i) 2 hours of cross-country flight training;  (ii) Three takeoffs and landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport;  (iii) One cross-country flight of at least 25 nautical miles between the takeoff and landing locations; and  (iv) 2 hours of flight training with an authorized instructor on those areas of operation specified in § 61.311 in preparation for the practical test within the preceding 2 calendar months from the month of the test.</p>
<p>(6) Lighter-than-air category and balloon class privileges,</p>	<p>7 hours of flight time in a balloon, including three flights with an authorized instructor and one flight performing the duties of pilot in command in a balloon with an authorized instructor in the areas of operation listed in § 61.311,</p>	<p>(i) 2 hours of cross-country flight training; and  (ii) 1 hours of flight training with an authorized instructor on those areas of operation specified in § 61.311 in preparation for the practical test within the preceding 2 calendar months from the month of the test.</p>
<p>(7) Powered parachute category land or sea class privileges,</p>	<p>12 hours of flight time in a powered parachute, including 10 hours of flight training from an authorized instructor in a powered parachute, and at least 2 hours of solo flight training in the areas of operation listed in § 61.311</p>	<p>(i) 1 hour of cross-country flight training,  (ii) 20 takeoffs and landings to a full stop in a powered parachute with each landing involving flight in the traffic pattern at an airport;  (iii) 10 solo takeoffs and landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport;  (iv) One solo flight with a landing at a different airport and one segment of the flight consisting of a straight-line distance of at least 10 nautical miles between takeoff and landing locations; and</p>

		(v) 1 hours of flight training with an authorized instructor on those areas of operation specified in § 61.311 in preparation for the practical test within the preceding 2 calendar months from the month of the test.
(8) Weight-shift-control aircraft category land or sea class privileges,	20 hours of flight time, including 15 hours of flight training from an authorized instructor in a weight-shift-control aircraft and at least 5 hours of solo flight training in the areas of operation listed in § 61.311,	(i) 2 hours of cross-country flight training; (ii) 10 takeoffs and landings to a full stop (with each landing involving a flight in the traffic pattern) at an airport; (iii) One solo cross-country flight of at least 50 nautical miles total distance, with a full-stop landing at a minimum of two points, and one segment of the flight consisting of a straight-line distance of at least 25 nautical miles between takeoff and landing locations; and (iv) 2 hours of flight training with an authorized instructor on those areas of operation specified in § 61.311 in preparation for the practical test within the preceding 2 calendar months from the month of the test.
(9) Rotorcraft category and helicopter class, only if that helicopter is certificated under § 21.190 of this chapter and obtains the simplified flight controls design designation,	30 hours of helicopter flight time, including at least 15 hours of flight training from an authorized instructor in a helicopter, and at least 5 hours of solo flight training in the areas of operation listed in § 61.311, as appropriate,	(i) 2 hours of flight training en route to an airport that is located more than 25 nautical miles from the airport where the applicant normally trains; (ii) 3 takeoffs and landings at the airport located more than 25 nautical miles from the airport where the applicant normally trains; (iii) 3 hours of solo flying in the aircraft for the privilege sought, on the areas of operation listed in § 61.98 that apply to the

		aircraft category and class privilege sought; and (iv) 3 hours of flight training with an authorized instructor on those areas of operation specified in § 61.311 in preparation for the practical test within the preceding 2 calendar months from the month of the test.
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(b) *Flight simulation training device and aviation training device credit.* (1) Sport pilot applicants can use up to 2.5 hours of training credit in a qualified flight simulation training device and aviation training device representing the appropriate category and class of aircraft to meet the experience requirements of this part.

(2) The training must be provided by an authorized instructor who possesses the appropriate aircraft rating or privilege sought by the applicant.

41. Amend § 61.315 by revising paragraph (a), the introductory text of paragraph (c), and paragraph (c)(5) and adding paragraph (c)(20) to read as follows:

**§ 61.315 What are the privileges and limits of my sport pilot certificate?**

(a) If you hold a sport pilot certificate you may act as pilot in command of an aircraft that meets the provisions of § 61.316, except as specified in paragraph (c) of this section.

\* \* \* \* \*

(c) You may not act as pilot in command of an aircraft:

\* \* \* \* \*

(5) At night, except as provided in § 61.329.

\* \* \* \* \*

(20) If the aircraft—

(i) Has retractable landing gear, unless you have met the requirements of

§ 61.331(a).

(ii) Has a controllable pitch propeller, unless you have met the requirements of § 61.331(b).

42. Add § 61.316 to read as follows:

**§ 61.316 What are the performance limits and design requirements for the aircraft that a sport pilot may operate?**

(a) If you hold a sport pilot certificate, you may act as pilot in command of an aircraft that, since its original certification, meets the following requirements:

(1) A maximum stalling speed or minimum steady flight speed without the use of lift-enhancing devices ( $V_{S1}$ ) of not more than 45 knots CAS, except for airplanes, which must have a  $V_{S1}$  speed of not more than 54 knots CAS at the aircraft's maximum certificated takeoff weight and most critical center of gravity.

(2) A maximum seating capacity of two persons, except for airplanes, which may have a maximum seating capacity of four persons.

(3) A non-pressurized cabin, if equipped with a cabin.

(4) For powered aircraft other than powered gliders, a fixed or ground-adjustable propeller, except as provided in paragraph (b) of this section.

(5) For powered gliders, a fixed or feathering propeller system.

(6) For gyroplanes, a fixed-pitch, semi-rigid, teetering, two-blade rotor system.

(7) For powered aircraft other than balloons or airships, the loss of partial power would not adversely affect directional control of the aircraft and the aircraft design must allow the pilot the capability of establishing a controlled descent in the event of a partial or total powerplant failure.

(8) For helicopters, they must be certificated with the simplified flight controls design and designation.

(9) For a glider, fixed or retractable landing gear.



(10) For an aircraft intended for operation on water, fixed or retractable landing gear or a hull.

(11) For powered-aircraft other than a glider or an aircraft intended for operation on water, fixed landing gear except as provided in paragraph (b) of this section.

(b) If you hold a sport pilot certificate, you may act as pilot in command of an airplane that, since its original certification, has retractable landing gear or a controllable pitch propeller if you have met the training and endorsement requirements specified in § 61.331.

43. Amend § 61.321 by:

- a. Revising the section heading and introductory text;
- b. Removing the phrase “light-sport aircraft” and adding the word “aircraft” in their place in paragraph (a);
- c. Revising paragraph (b);
- d. Removing the phrase “light-sport aircraft” and adding the word “aircraft” in their place in paragraph (d); and
- e. Adding paragraph (e).

The revision and addition read as follows:

**§ 61.321 How do I obtain privileges to operate an additional category or class of aircraft that satisfy the limitations identified in § 61.316?**

If you hold a sport pilot certificate and seek to operate an additional category or class of aircraft that satisfy the limitations identified in § 61.316, you must -

\* \* \* \* \*

(b) Except as provided in paragraph (e) of this section, successfully complete a proficiency check from an authorized instructor other than the instructor who trained you on the aeronautical knowledge areas and areas of operation specified in §§ 61.309 and 61.311 for the additional aircraft privilege you seek;

\* \* \* \* \*

(e) If you are seeking to add an airplane single-engine land or sea or a rotorcraft-helicopter privilege to your pilot certificate, successfully accomplish a knowledge and practical test for that category and class privilege as specified in § 61.307.

44. Amend § 61.325 by revising the section heading and introductory text to read as follows:

**§ 61.325 How does a sport pilot obtain privileges to operate an aircraft at an airport within, or in airspace within, Class B, C, and D airspace, or in other airspace with an airport having an operational control tower?**

If you hold a sport pilot certificate and seek privileges to operate an aircraft in Class B, C, or D airspace, at an airport located in Class B, C, or D airspace, or at an airport having an operational control tower, you must receive and log ground and flight training. The authorized instructor who provides this training must provide a logbook endorsement that certifies you are proficient in the following aeronautical knowledge areas and areas of operation:

\* \* \* \* \*

45. Add § 61.329 to read as follows:

**§ 61.329 How do I obtain privileges to operate an aircraft at night?**

You may act as pilot in command with a sport pilot certificate during night operations if you:

(a) Receive three hours of flight training at night from an authorized instructor and receive a logbook endorsement from an authorized instructor certifying that you are proficient in the operation of the aircraft at night;

(b) Conduct at least one cross-country flight during the flight training under paragraph (a) of this section at night, with a landing at an airport of at least 25 nautical miles from the departure airport, except for powered parachutes;

(c) Accomplish at least ten takeoffs and landings at night with an authorized instructor; and

(d) Either hold a medical certificate issued under part 67 of this chapter or, provided the pilot holds a valid U.S. driver's license, meet the requirements of § 61.23(c)(3) and conduct the operation consistently with § 61.113(i). If you are satisfying this by meeting the requirements of § 61.23(c)(3), if there is a conflict between the requirements of this section and § 61.113(i), this section controls.

46. Add § 61.331 to read as follows:

**§ 61.331 How do I obtain privileges to operate an aircraft with retractable landing gear or an airplane with a controllable pitch propeller?**

(a) If you hold a sport pilot certificate and seek privileges to operate an aircraft with retractable landing gear, you must either—

(1) Satisfy the training and endorsement requirements specified in § 61.31(e); or

(2) Receive and log ground and flight training from an authorized instructor in an airplane that has retractable landing gear and receive an endorsement from the instructor certifying that you are proficient to operate the aircraft.

(b) If you hold a sport pilot certificate and seek privileges to operate an airplane with a controllable pitch propeller, you must either—

(1) Satisfy the training and endorsement requirements specified in § 61.31(e); or

(2) Receive and log ground and flight training from an authorized instructor in an airplane that has a controllable pitch propeller and receive an endorsement from the instructor certifying that you are proficient to operate the aircraft.

47. Amend § 61.405 by adding paragraphs (b)(3) and (4) to read as follows:

**§ 61.405 What tests do I have to take to obtain a flight instructor certificate with a sport pilot rating?**

\* \* \* \* \*

(b) \* \* \*

(3) For persons seeking a rotorcraft-helicopter privilege, the applicant must complete a practical test and satisfactorily demonstrate the knowledge, risk management, and skill elements for each area of operation specified in the Sport Flight Instructor for Helicopter – Simplified Flight Controls Airman Certification Standards, referenced in paragraph (b)(4) of this section.

(4) FAA-S-ACS-31, Sport Flight Instructor for Helicopter – Simplified Flight Controls Airmen Certification Standards, [date to be included], is incorporated by reference into this section with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. This material is available for inspection at the Federal Aviation Administration (FAA) and the National Archives and Records Administration (NARA). Contact FAA at: Airman Testing Standards Branch/Regulatory Support Division, 405-954-4151, AFS630Comments@faa.gov, faa.gov/training\_testing. For information on the availability of this material at NARA, visit: archives.gov/federal-register/cfr/ibr-locations.html, or email: fr.inspection@nara.gov. The material may be obtained from FAA, 800 Independence Avenue SW, Washington, D.C. 20591, 866-835-5322, faa.gov/training\_testing.

48. Revise § 61.409 to read as follows:

**§ 61.409 What flight proficiency requirements must I meet to apply for a flight instructor certificate with a sport pilot rating?**

You must receive and log ground and flight training from an authorized instructor on the following areas of operation for the aircraft category and class in which you seek flight instructor privileges:

- (a) Technical subject areas.
- (b) Preflight preparation.
- (c) Preflight lesson on a maneuver to be performed in flight.

- (d) Preflight procedures.
- (e) Airport, heliport, seaplane base, and gliderport operations, as applicable.
- (f) Hovering maneuvers (applicable only to helicopters).
- (g) Takeoffs (or launches), landings, and go-arounds.
- (h) Fundamentals of flight.
- (i) Performance maneuvers and, for gliders, performance speeds
- (j) Ground reference maneuvers (except for gliders, helicopters, and lighter-than-air).
- (k) Soaring techniques (gliders only).
- (l) Slow flight (not applicable to lighter-than-air, helicopters, and powered parachutes).
- (m) Stalls (not applicable to lighter-than-air, powered parachutes, helicopters, and gyroplanes).
- (n) Spins (applicable to airplanes and gliders).
- (o) Emergency operations.
- (p) Tumble entry and avoidance techniques (applicable to weight-shift-control aircraft).
- (p) Special operations (helicopter only).
- (q) Post-flight procedures.

49. Amend § 61.411 by adding paragraph (h) to read as follows:

**§ 61.411 What aeronautical experience must I have to apply for a flight instructor certificate with a sport pilot rating?**

\* \* \* \* \*

If you are applying for a flight instructor certificate with a sport pilot rating for...	Then you must log at least...	Which must include at least...
*	* * * * *	* *

(h) Rotorcraft category and helicopter class, only if that helicopter is certificated under § 21.190 of this chapter and obtains the simplified flight controls design and designation,	(1) 150 hours of flight time as a pilot,	(i) 100 hours of flight time as pilot in command in powered aircraft; (ii) 50 hours of flight time in a helicopter; (iii) 25 hours of cross-country flight time; (iv) 10 hours of cross-country flight time in a helicopter; and (v) 15 hours of flight time as pilot in command in a helicopter.
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50. Amend § 61.415 by adding paragraphs (k) through (n) to read as follows:

**§ 61.415 What are the limits of a flight instructor certificate with a sport pilot rating?**

\* \* \* \* \*

(k) You cannot carry more than one person.

(l) You may not provide training in an airplane with a controllable pitch propeller or an aircraft with a retractable landing gear unless you have received training and an instructor endorsement validating proficiency in the safe operation of these types of aircraft.

(m) You may not provide training in an aircraft that has the simplified flight controls design and designation unless you have received the model-specific flight training and an endorsement from an authorized instructor validating proficiency in the safe operation of these aircraft.

(n) You may not provide training in an aircraft at night unless you have completed the night experience and instructor endorsement requirements listed in § 61.329.

51. Amend § 61.419 by:

a. Revising the section heading;

b. Removing the phrase “light-sport aircraft” and adding the word “aircraft” in their place from the introductory text;

c. Revising paragraph (b); and

d. Adding paragraph (e).

The revisions and addition read as follows:

**§ 61.419 How do I obtain privileges to provide training in an additional category or class of aircraft?**

\* \* \* \* \*

(b) Except as provided in paragraph (e) of this section, successfully complete a proficiency check from an authorized instructor other than the instructor who trained you on the areas specified in § 61.409 for the additional category and class flight instructor privilege you seek;

\* \* \* \* \*

(e) If you are seeking to add an airplane single-engine land or sea or a rotorcraft-helicopter privilege to your flight instructor certificate, successfully accomplish a knowledge and practical test for that category and class privilege as specified in § 61.405.

52. Amend § 61.429 by adding paragraph (d) to read as follows:

**§ 61.429 May I exercise the privileges of a flight instructor certificate with a sport pilot rating if I hold a flight instructor certificate with another rating?**

\* \* \* \* \*

(d) If you want to exercise the privileges of your flight instructor certificate in a model-specific aircraft that has a simplified flight controls designation, you must meet the training and endorsement requirements specified in § 61.31(l) prior to providing any flight training in that aircraft.

**PART 65—CERTIFICATION: AIRMEN OTHER THAN FLIGHT CREWMEMBERS**

53. The authority citation for part 65 continues to read as follows:

**Authority:** 49 U.S.C. 106(f), 106(g), 40113, 44701-44703, 44707, 44709-44711, 45102-45103, 45301-45302.

54. Amend § 65.15 by revising paragraphs (a), (b), and (d) to read as follows:

**§ 65.15 Duration of certificates.**

(a) Except for repairman certificates issued in accordance with § 65.101, a certificate or rating issued under this part is effective until it is surrendered, suspended, or revoked.

(b) Unless it is sooner surrendered, suspended, or revoked, a repairman certificate issued in accordance with § 65.101 is effective until the holder is relieved from the duties for which the holder was employed and certificated.

\* \* \* \* \*

(d) Except for temporary certificates issued under § 65.13, the holder of a paper certificate issued under this part may not exercise the privileges of that certificate.

55. Amend § 65.23 by revising paragraph (a)(2) to read as follows:

**§ 65.23 Incorporation by reference.**

\* \* \* \* \*

(a) \* \* \*

(2) FAA-S-ACS-1, Aviation Mechanic General, Airframe, and Powerplant Airman Certification Standards, November 1, 2021; IBR approved for §§ 65.75, 65.79, and 65.107.

\* \* \* \* \*

56. Revise § 65.81 to read as follows:

**§ 65.81 General privileges and limitations.**

(a) A certificated mechanic may perform or supervise the maintenance, preventive maintenance or alteration of an aircraft or appliance, or a part thereof, for which that person is rated (but excluding major repairs to, and major alterations of, propellers, and



any repair to, or alteration of, instruments), and may perform additional duties in accordance with §§ 65.85, 65.87, and 65.95. However, a certificated mechanic may not supervise the maintenance, preventive maintenance, or alteration of, or approve for return to service, any aircraft or appliance, or part thereof, for which that person is rated unless that person has satisfactorily performed the work concerned at an earlier date. If that person has not so performed that work at an earlier date, that person may show the ability to do it by performing it to the satisfaction of the Administrator or under the direct supervision of a certificated and appropriately rated mechanic, or a certificated repairman, who has had previous experience in the specific operation concerned.

(b) A certificated mechanic may not exercise the privileges of that person's certificate and rating unless that person understands the current instructions of the manufacturer, and the maintenance manuals, for the specific operation concerned.

57. Revise § 65.85 to read as follows:

**§ 65.85 Airframe rating; additional privileges.**

(a) Except as provided in paragraph (b) of this section, a certificated mechanic with an airframe rating may approve for return to service an airframe, or any related part or appliance, after that person has performed, supervised, or inspected its maintenance or alteration (excluding major repairs and major alterations). In addition, a certificated mechanic with an airframe rating may perform the 100-hour inspection required by part 91 of this chapter on an airframe, or any related part or appliance, and approve for return to service.

(b) A certificated mechanic with an airframe rating can approve for return to service an airframe, or any related part or appliance, of an aircraft with a special airworthiness certificate in the light-sport category after performing and inspecting a major repair or major alteration for products that are not produced under an FAA approval provided the major repair or major alteration was authorized by, and performed

in accordance with instructions developed by, the manufacturer or a person acceptable to the FAA.

58. Revise § 65.87 to read as follows:

**§ 65.87 Powerplant rating; additional privileges.**

(a) Except as provided in paragraph (b) of this section, a certificated mechanic with a powerplant rating may approve for return to service a powerplant or propeller or any related part or appliance, after that person has performed, supervised, or inspected its maintenance or alteration (excluding major repairs and major alterations). In addition, a certificated mechanic with a powerplant rating may perform the 100-hour inspection required by part 91 of this chapter on a powerplant or propeller, or any part thereof, and approve and for return it service.

(b) A certificated mechanic with a powerplant rating can approve for return to service a powerplant or propeller, or any related part or appliance, of an aircraft with a special airworthiness certificate in the light-sport category after performing and inspecting a major repair or major alteration for products that are not produced under an FAA approval, provided the major repair or major alteration was authorized by, and performed in accordance with instructions developed by, the manufacturer or a person acceptable to the FAA.

59. Amend § 65.103 by revising paragraph (c) to read as follows:

**§ 65.103 Repairman certificate: Privileges and limitations.**

\* \* \* \* \*

(c) This section does not apply to the holder of a repairman certificate (experimental aircraft builder) issued in accordance with § 65.104 or to the holder of a repairman certificate (light-sport) issued in accordance with § 65.107, while that repairman is performing work under that certificate.

60. Revise § 65.107 to read as follows:

**§ 65.107 Repairman certificate (light-sport): Eligibility and training courses.**

(a) *Ratings.* The following ratings may be issued on a repairman certificate (light-sport) under this section:

(1) Inspection rating.

(2) Maintenance rating.

(b) *Eligibility requirements: General.* To be eligible for a repairman certificate (light-sport), a person must:

(1) Be at least 18 years old;

(2) Be able to read, speak, write, and understand English;

(3) Be a citizen of the U.S. or a citizen of a foreign country who has been lawfully admitted for permanent residence in the U.S.;

(4) Demonstrate the requisite skill to determine whether the aircraft is in a condition for safe operation;

(5) Complete a training course pursuant to paragraph (c) or (d) of this section, as applicable to the rating sought; and

(6) Pass a written test administered by the training course provider that covers the contents of the course pursuant to paragraph (c) or (d) of this section, applicable to the rating sought.

(c) *Eligibility requirements: Repairman certificate (light-sport) with an inspection rating.* To obtain an inspection rating on a repairman (light-sport) certificate, a person must satisfactorily complete, and present documentary evidence satisfactory to the Administrator of, a 16-hour training course accepted by the Administrator on inspecting the category of experimental aircraft for which the person intends to exercise the privileges of the rating.

(d) *Eligibility requirements: Repairman certificate (light-sport) with a maintenance rating.* To obtain a maintenance rating on a repairman (light-sport)

certificate, a person must satisfactorily complete, and present documentary evidence satisfactory to the Administrator of completion of, a training course accepted by the Administrator appropriate to the category of aircraft for which the person intends to exercise the privileges of the rating.

(1) Until [DATE SIX MONTHS AFTER EFFECTIVE DATE OF RULE], the training course must provide the following number of hours of instruction for the applicable privileges:

- (i) For airplane privileges—120-hours;
- (ii) For weight-shift control aircraft privileges—104 hours;
- (iii) For powered parachute privileges—104 hours;
- (iv) For lighter than air privileges—80 hours; and
- (v) For glider privileges—80 hours; or

(2) The training course must include, at a minimum, the knowledge, risk management, and skill elements for each subject contained in the Aviation Mechanic General, Airframe, and Powerplant Airman Certification Standards (incorporated by reference, see § 65.23), as appropriate to the category of aircraft for which the person intends to exercise the privileges of the rating.

(e) *Training course providers.* The training course described in paragraphs (c) and (d) of this section must be delivered using facilities, equipment, and materials appropriate to the training course content taught and must be delivered by instructors that are appropriately qualified to teach the course content. After a student completes the training and passes the written test, the training course provider must provide a certificate of completion to the student indicating the name of the training provider, the FAA course acceptance number, the rating applicable to the training course, the category of aircraft the training was based on, and the date of training completion.

61. Effective [DATE 6 MONTHS after date OF PUBLICATION OF THE FINAL RULE IN THE FEDERAL REGISTER], amend § 65.107 further by revising paragraph (d) to read as follows:

**§ 65.107 Repairman certificate (light-sport): Eligibility and training courses.**

\* \* \* \* \*

(d) *Eligibility requirements: Repairman certificate (light-sport) with a maintenance rating.* To obtain a maintenance rating on a repairman (light-sport) certificate, a person must satisfactorily complete, and present documentary evidence satisfactory to the Administrator of, a training course accepted by the Administrator appropriate to the category of aircraft for which the person intends to exercise the privileges of the rating. The course must include, at a minimum, the knowledge, risk management, and skill elements for each subject contained in the Aviation Mechanic General, Airframe, and Powerplant Airman Certification Standards (incorporated by reference, see § 65.23).

\* \* \* \* \*

62. Add § 65.109 to subpart E to read as follows:

**§ 65.109 Repairman certificate (light-sport): Privileges and limitations.**

(a) The holder of a repairman certificate (light-sport) with an inspection rating may perform the annual condition inspection on an aircraft:

(1) That is owned by the holder;

(2) That has an experimental certificate for the purpose of operating light-sport category aircraft under § 21.191(i) of this chapter or operating light-sport category kit-built aircraft under § 21.191(j) of this chapter, or an aircraft that does not meet the provision of § 103.1 of this chapter and that has an experimental certificate for the purpose of operating light-sport that was issued on or before January 31, 2008; and

(3) That is in the same category of aircraft for which the holder has completed the training specified in § 65.107(c).

(b) The holder of a repairman certificate (light-sport) with a maintenance rating may -

(1) Approve for return to service an aircraft that has been issued a special airworthiness certificate in the light-sport category under § 21.190 of this chapter, or any part thereof, after performing or inspecting maintenance (to include the annual condition inspection and the 100-hour inspection required by § 91.327 of this chapter), preventive maintenance, or an alteration (excluding a major repair or a major alteration on a product produced under an FAA approval);

(2) Perform the annual condition inspection on an aircraft that has an experimental certificate for the purpose of operating light-sport category aircraft under § 21.191(i) of this chapter or operating light-sport category kit-built aircraft under § 21.191(j) of this chapter, or an aircraft that does not meet the provision of § 103.1 of this chapter and that has an experimental certificate for the purpose of operating light-sport that was issued on or before January 31, 2008; and

(3) Only perform maintenance, preventive maintenance, and an alteration on an aircraft that is in the same category of aircraft for which the holder has completed the training specified in § 65.107(d). Before performing a major repair, the holder must complete additional training acceptable to the FAA and appropriate to the repair performed.

(c) The holder of a repairman certificate (light-sport) with a maintenance rating may not approve for return to service any aircraft or part thereof unless that person has previously performed the work concerned satisfactorily. If that person has not previously performed that work, the person may show the ability to do the work by performing it to the satisfaction of the FAA, or by performing it under the direct supervision of a

certificated and appropriately rated mechanic, or a certificated repairman, who has had previous experience in the specific operation concerned. The repairman may not exercise the privileges of the certificate unless the repairman understands the current instructions of the manufacturer and the maintenance manuals for the specific operation concerned.

**PART 91—GENERAL OPERATING REQUIREMENTS AND FLIGHT RULES**

63. The authority citation for part 91 is revised to read as follows:

**Authority:** 49 U.S.C. 106(f), 106(g), 40101, 40103, 40105, 40113, 40120, 44101, 44111, 44701, 44704, 44709, 44711, 44712, 44715, 44716, 44717, 44722, 44740, 46306, 46315, 46316, 46504, 46506-46507, 47122, 47508, 47528-47531, 47534; Pub. L. 114-190, 130 Stat. 615 (49 U.S.C. 44703 note); articles 12 and 29 of the Convention on International Civil Aviation, 61 Stat. 1180; Pub. L. 112-95, 126 Stat. 11.

64. Amend § 91.113 by:

- a. Revising paragraphs (d)(2) and (3); and
- b. Removing the undesignated paragraph following paragraph (d)(2).

The revisions read as follows:

**§ 91.113 Right-of-way rules: Except water operations.**

\* \* \* \* \*

(d) \* \* \*

(2) A glider has the right-of-way over powered aircraft.

(3) An airship has the right-of-way over all other powered aircraft. However, an aircraft towing or refueling other aircraft has the right-of-way over all other powered aircraft.

\* \* \* \* \*

65. Amend § 91.126 by revising paragraphs (b)(1) and (2) to read as follows:

**§ 91.126 Operating on or in the vicinity of an airport in Class G airspace.**

\* \* \* \* \*

(b) \* \* \*

(1) Each pilot of a powered fixed wing aircraft and powered-lift aircraft operating in wing-borne flight mode must make all turns to the left unless the airport displays approved light signals or visual markings indicating that turns should be made to the right, in which case the pilot must make all turns to the right; and

(2) Each pilot of any other aircraft must avoid the flow of the aircraft specified in paragraph (b)(1) of this section.

\* \* \* \* \*

66. Amend § 91.309 by revising paragraph (a)(2) to read as follows:

**§ 91.309 Towing: Gliders and unpowered ultralight vehicles.**

(a) \* \* \*

(2) The towing aircraft has:

(i) A standard airworthiness certificate and is equipped with a tow-hitch of a kind, and installed in a manner, that is approved by the Administrator;

(ii) A special airworthiness certificate for which a type certificate has been issued, and is equipped with a tow-hitch of a kind, and installed in a manner, that is approved or otherwise authorized by the Administrator; or

(iii) A special airworthiness certificate, for which the aircraft has not been previously issued a type certificate, and is equipped with a tow-hitch of a kind that is approved or otherwise acceptable to, and is installed in a manner acceptable to, the Administrator;

\* \* \* \* \*

67. Amend § 91.319 by revising paragraphs (a) introductory text and (c) and adding paragraph (k) to read as follows:

**§ 91.319 Aircraft having experimental certificates: Operating limitations.**



(a) Except as specified in paragraph (k) of this section, no person may operate an aircraft that has an experimental certificate—

\* \* \* \* \*

(c) Unless otherwise authorized by the Administrator in operating limitations, no person may operate an aircraft that has a certificate issued under § 21.191 of this chapter over a densely populated area.

\* \* \* \* \*

(k) A person may operate an aircraft issued an experimental certificate to conduct a space support vehicle flight carrying persons or property for compensation or hire provided the operation is conducted in accordance with § 91.331.

\* \* \* \* \*

68. Effective [DATE 6 MONTHS after date OF PUBLICATION OF THE FINAL RULE IN THE FEDERAL REGISTER], amend §91.319 further by adding paragraph (l) to read as follows:

**§ 91.319 Aircraft having experimental certificates: Operating limitations.**

\* \* \* \* \*

(l) No person may operate an aircraft issued an experimental certificate under § 21.191(i) or (j) of this chapter after the performance of an alteration accomplished after [EFFECTIVE DATE OF THE FINAL RULE], unless that aircraft has demonstrated compliance with the applicable requirements of part 36 of this chapter.

\* \* \* \* \*

69. Effective [DATE 6 MONTHS after date OF PUBLICATION OF THE FINAL RULE IN THE FEDERAL REGISTER], amend § 91.327 by:

- a. Revising the section heading and paragraphs (a), (b)(1), (4), (5), and (6), (c) introductory text, and (c)(1);
- b. Redesignating paragraph (f) as paragraph (g); and

c. Adding a new paragraph (f).

The revisions and addition read as follows:

**§ 91.327 Aircraft issued a special airworthiness certificate in the light-sport category: Operating limitations.**

(a) No person may operate an aircraft that has a special airworthiness certificate in the light-sport category for compensation or hire except—

(1) To tow a glider or an unpowered ultralight vehicle in accordance with § 91.309;

(2) To conduct flight training; or

(3) To conduct any aerial work operations specified in the aircraft's pilot operating handbook or operating limitations, as applicable, and specified in the aircraft's statement of compliance, in accordance with § 21.190 of this chapter.

(b) \* \* \*

(1) The aircraft is maintained by a certificated repairman (light-sport aircraft) with a maintenance rating, an appropriately rated mechanic, or an appropriately rated repair station in accordance with the applicable provisions of part 43 of this chapter and maintenance and inspection procedures developed by the aircraft manufacturer or other maintenance and inspection procedures acceptable to the FAA;

\* \* \* \* \*

(4) The aircraft has demonstrated compliance with the applicable requirements of part 36 of this chapter;

(5) Each minor repair or minor alteration to an aircraft meets the applicable and current FAA-accepted consensus standards specified in the statement of compliance submitted to the FAA for the aircraft;

(6) Each major repair or major alteration is authorized by the manufacturer or a person acceptable to the FAA, and is performed and inspected in accordance with

maintenance and inspection procedures developed by the manufacturer or a person acceptable to the FAA; and

\* \* \* \* \*

(c) No person may operate an aircraft issued a special airworthiness certificate in the light-sport category to tow a glider or unpowered ultralight vehicle for compensation or hire or conduct flight training for compensation or hire in an aircraft which that person provides unless within the preceding 100 hours of time in service the aircraft has—

(1) Been inspected by a certificated repairman (light-sport) with a maintenance rating, an appropriately rated mechanic, or an appropriately rated repair station in accordance with inspection procedures developed by the aircraft manufacturer or maintenance and inspection procedures acceptable to the FAA and been approved for return to service in accordance with part 43 of this chapter; or

\* \* \* \* \*

(f) No person may operate an aircraft certificated in the light-sport category to carry –

(1) More than four occupants, including the pilot, if the aircraft is an airplane; or

(2) More than two occupants, including the pilot, if the aircraft is other than an airplane.

\* \* \* \* \*

70. Add § 91.331 to read as follows:

**§ 91.331 Space support vehicle flights: Operating limitations.**

(a) A person may operate an aircraft to conduct a space support vehicle flight carrying persons or property for compensation or hire provided—

(1) The aircraft has a special airworthiness certificate issued under § 21.191 of this chapter to operate the aircraft for the purpose of conducting a space support vehicle flight.

(2) The aircraft conducting the space support vehicle flight —

(i) Takes flight and lands at a single launch or reentry site that is operated by an entity licensed to operate the launch or reentry site under 51 U.S.C. chapter 509;

(ii) Is owned or operated by a launch or reentry vehicle operator licensed under 51 U.S.C. chapter 509, or on behalf of a launch or reentry vehicle operator licensed under 51 U.S.C. chapter 509;

(iii) Is a launch vehicle, a reentry vehicle, or a component of a launch or reentry vehicle licensed for operations pursuant to 51 U.S.C. chapter 509; and

(iv) Is used only to simulate space flight conditions in support of —

(A) Training for potential space flight participants, government astronauts, or crew (as those terms are defined in 51 U.S.C. chapter 509);

(B) The testing of hardware to be used in space flight; or

(C) Research and development tasks, which require the unique capabilities of the aircraft conducting the flight.

(b) The Administrator may prescribe additional operating limitations that the Administrator considers necessary in the interest of safety.

71. Amend § 91.409 by revising paragraph (c)(1) to read as follows:

**§ 91.409 Inspections**

\* \* \* \*

(c) \* \* \*

(1) An aircraft that carries a special flight permit, a current experimental certificate, a light sport, or provisional airworthiness certificate;

\* \* \* \*

72. Amend § 91.417 by revising paragraph (a)(2)(v) to read as follows:

**§ 91.417 Maintenance records.**

\* \* \* \*

(a) \* \* \*

(2) \* \* \*

(v) The current status of applicable airworthiness directives (AD) including, for each, the method of compliance, the AD number and revision date. If the AD involves recurring action, the time and date when the next action is required.

\* \* \* \* \*

**PART 119—CERTIFICATION: AIR CARRIERS AND COMMERCIAL OPERATIONS**

73. The authority citation for part 119 continues to read as follows:

**Authority:** Pub. L. 111-216, sec. 215 (August 1, 2010); 49 U.S.C. 106(f), 106(g), 1153, 40101, 40102, 40103, 40113, 44105, 44106, 44111, 44701-44717, 44722, 44901, 44903, 44904, 44906, 44912, 44914, 44936, 44938, 46103, 46105.

74. Amend § 119.1 by:

- a. Removing the word “or” at the end of paragraph (e)(10);
- b. Removing the period at the end of paragraph (e)(11) and adding “; or” in its place; and
- c. Adding paragraph (e)(12).

The addition reads as follows:

**§ 119.1 Applicability.**

\* \* \* \* \*

(e) \* \* \*

(12) Space support vehicle flights conducted under the provisions of § 91.331 of this chapter.

Issued under authority provided by 49 U.S.C. 106(f), 44701(a), and 44703 in Washington, DC.

**Lirio Liu,**

*Executive Director, Aircraft Certification Service.*

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