



**U.S. Department
of Transportation**
Federal Aviation
Administration

Advisory Circular

Subject: Exception for Limited Recreational
Operations of Unmanned Aircraft

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Change:

This advisory circular (AC) provides guidance to (1) persons operating unmanned aircraft (UA) under the exception for limited recreational operations of UA established in Section 349 of Public Law (P.L.) [115-254](#), FAA Reauthorization Act of 2018, codified at Title 49 of the United States Code (49 U.S.C.) § [44809](#); (2) persons using Unmanned Aircraft Systems (UAS) for educational or research purposes pursuant to Section 350 of the FAA Reauthorization Act of 2018; (3) persons requesting recognition as community-based organizations (CBO); (4) persons seeking to establish fixed recreational flying sites; and (5) CBOs conducting sanctioned events.

A handwritten signature in black ink, reading "Wesley L. Mooty".

Wesley L. Mooty
Acting Deputy Executive Director, Flight Standards Service

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CHAPTER 1. GENERAL

Purpose of This Advisory Circular (AC). The guidance provided in this AC supports the limited recreational operation of unmanned aircraft (UA) by explaining how a recreational flyer of UA may comply with the statutory requirements of Title 49 of the United States Code (49 U.S.C.) This AC provides guidance for operating UA under the exception, including operations for certain educational and research purposes; FAA recognition of community-based organizations (CBO); and application for fixed sites and CBO-sanctioned UA flying events. UA (sometimes referred to as “drones”) are aircraft operated without the possibility of direct human intervention from within or on the aircraft. Refer to 49 U.S.C. § [44801](#).

1.1.1 Effects of Guidance. The contents of this document do not have the force and effect of law and are not meant to bind the public in any way, and the document is intended only to provide information to the public regarding existing requirements under the law or agency policies.

1.2 Audience. This AC provides information to:

1. Persons operating UA under the exception for limited recreational operations of UA established in Section 349 of Public Law (P.L.) [115-254](#), FAA Reauthorization Act of 2018, codified at 49 U.S.C. § 44809.
2. Persons operating UA for educational or research purposes pursuant to Section 350 of the FAA Reauthorization Act of 2018, as amended by Section 10002 of P.L. [116-283](#), William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021.
3. Persons requesting FAA recognition as a CBO.
4. Persons seeking the establishment of fixed recreational flying sites.
5. Persons organizing UA-only CBO-sponsored events.

1.3 Where You Can Find This AC. You can find this AC on the FAA’s website at https://www.faa.gov/regulations_policies/advisory_circulars and the Dynamic Regulatory System (DRS) at <https://drs.faa.gov>.

1.4 What This AC Cancels. AC 91-57B, Exception for Limited Recreational Operations of Unmanned Aircraft, dated May 31, 2019, is canceled.

1.5 Related References (current editions).

1. Title 49 U.S.C. Subtitle [VII](#), Aviation Programs, § 40101 *et seq.*
2. Title 49 U.S.C. § [44809](#), Exception for Limited Recreational Operations of Unmanned Aircraft.
3. P.L. [115-254](#), FAA Reauthorization Act of 2018.
4. P.L. [116-283](#), William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021.

5. Title 14 of the Code of Federal Regulations (14 CFR) Part [45](#), Identification and Registration Marking.
6. Title 14 CFR Part [47](#), Aircraft Registration.
7. Title 14 CFR Part [48](#), Registration and Marking Requirements for Small Unmanned Aircraft.
8. Title 14 CFR Part [89](#), Remote Identification of Unmanned Aircraft.
9. Title 14 CFR Part [107](#), Small Unmanned Aircraft Systems.
10. AC [107-2](#), Small Unmanned Aircraft Systems (Small UAS).
11. FAADroneZone: <https://faadronezone.faa.gov/>.
12. Unmanned Aircraft Systems (UAS) Data Delivery System: <https://udds-faa.opendata.arcgis.com/>.
13. Temporary Flight Restriction (TFR) Listing: <http://tfr.faa.gov/tfr2/list.html>.
14. Aeronautical Navigation Products (Charts): https://www.faa.gov/air_traffic/flight_info/aeronav/productcatalog/.
15. Notices to Air Missions (NOTAM): https://www.faa.gov/air_traffic/publications/notices/.
16. National Aviation Events Program: <https://www.faa.gov/about/initiatives/airshow/>.
17. UA Registration Guidance: https://www.faa.gov/licenses_certificates/aircraft_certification/aircraft_registry/UA/.

1.6 Background. On October 5, 2018, the President signed the FAA Reauthorization Act of 2018 into law. Section 349 of the FAA Reauthorization Act of 2018, codified at 49 U.S.C. § 44809, repealed the special rule for model aircraft in Section 336 of P.L. [112-95](#), FAA Modernization and Reform Act of 2012. Section 44809 allows a person to fly a UA without specific certification or operating authority from the FAA, so long as the operation meets certain limitations enumerated in the statute. Further, 49 U.S.C. § 44809(i) requires the FAA to publish an AC that identifies the limitations and process required for recognition of a CBO, as set forth in 49 U.S.C. § 44809(h).

1.7 Limited Recreational UA Operations.

- 1.7.1** Recreational flyers must ensure the operation of their UA complies with all applicable statutory and regulatory requirements.
- 1.7.2** The guidance provided in this AC explains how a recreational flyer can comply with the requirements of 49 U.S.C. § 44809 in order to operate a UA without FAA certification or operating authority. If the operation of a UA fails to meet all the operational limitations contained in 49 U.S.C. § 44809(a), such operation must be operated in accordance with the applicable FAA operating rules, and comply with the relevant FAA airman and aircraft certification requirements (e.g., 14 CFR part [21](#), [61](#), [91](#), or 107).
- 1.7.3** The Administrator may pursue an enforcement action against any person operating a UA under 49 U.S.C. § 44809 who endangers the safety of the National Airspace System

(NAS). Refer to 49 U.S.C. § 44809(e). Such operations include, but are not limited to, careless or reckless operations, or operations endangering persons or property.

- 1.7.4** Recreational operators must comply with part 89. Refer to 49 U.S.C. § 44809(f)(3). The FAA notes that FAA-Recognized Identification Areas (FRIA) established under part 89 and “fixed sites” for purposes of recreational flying under 49 U.S.C. § 44809(c) are two different kinds of UA operating areas with different purposes, requirements, and application processes. A fixed site is a location with a standing airspace authorization for recreational flying, while a FRIA is a location where UA may operate without remote identification. In some places where an airspace authorization is required for recreational flying, such as in controlled airspace and where a CBO has also obtained approval for a FRIA, a FRIA and fixed site may overlap. If a CBO has obtained authorization for a fixed site but has not obtained approval for a FRIA, remote identification requirements will still apply.
- 1.8 AC Feedback Form.** For your convenience, the AC Feedback Form is the last page of this AC. Note any deficiencies found, clarifications needed, or suggested improvements regarding the contents of this AC on the Feedback Form. The form includes instructions for submitting it to the FAA.

CHAPTER 2. RECREATIONAL FLYER STATUTORY LIMITATIONS

2.1 Recreational Flyer. For the purposes of this AC, a recreational flyer is a person who operates a UA strictly for recreational purposes in accordance with 49 U.S.C. § [44809](#). This is an operation-specific determination. Recreational operations that do not comply with the statutory parameters are not eligible for the recreational flyer exception of 49 U.S.C. § 44809.

2.2 Statutory Limitations. Recreational flyers operating small UA must adhere to all of the statutory limitations included in 49 U.S.C. § 44809(a) in order to operate under the statutory exception to operate a UA without specific certification or operating authority from the FAA. Pursuant to 49 U.S.C. § 44809(c)(2)(A) and (B), UA weighing more than 55 pounds must be operated under FAA-approved safety guidelines of a recognized CBO and operated solely at a fixed site. The statutory limitations for small UA operated under 49 U.S.C. § 44809 include the following:

2.2.1 Section 44809(a)(1). “The aircraft is flown strictly for recreational purposes.”

2.2.1.1 Recreational purposes may not include activities such as flights for any compensation, monetary or otherwise, and flights related to or in furtherance of a business. A person may not combine recreational and commercial purposes in a single flight.

Note: This AC references various types of operations or events that may typically be considered recreational; however, whether or not an operation is considered recreational is situation-specific. Each individual pilot must maintain responsibility for compliance with the 49 U.S.C. § 44809(a)(1) requirement for recreational purpose, regardless of whether the event is sanctioned by a CBO or otherwise presented as generally compliant with 49 U.S.C. § 44809(a)(1).

2.2.1.2 A “recreational purpose” includes, but is not limited to:

2.2.1.2.1 UAS operated by an institution of higher education, as defined in 20 U.S.C. § [1001\(a\)](#) for educational or research purposes;

Note: The term “educational or research purposes,” with respect to the operation of a UAS by an institution of higher education, includes:

1. Instruction of students at the institution;
2. Academic or research-related uses of UAS that have been approved by the institution, including Federal research;
3. Activities undertaken by the institution as part of research projects, including research projects sponsored by the Federal Government; and
4. Other academic activities approved by the institution.

- 2.2.1.2.2 UAS flown as part of an established Junior Reserve Officers' Training Corps (JROTC) program for educational or research purposes; or
- 2.2.1.2.3 UAS flown as part of an educational program that is chartered by a recognized CBO, as defined in 49 U.S.C. § 44809(h).

Note: Any elementary and secondary educational institutions, that are not institutions of higher education or do not fly UAS as part of a JROTC program, would either have to receive FAA recognition as a CBO or be chartered by a recognized CBO to operate under 49 U.S.C. § 44809; otherwise, such institutions must conduct all operations under part [107](#).

- 2.2.2 Section 44809(a)(2). "The aircraft is operated in accordance with or within the programming of a community-based organization's set of safety guidelines that are developed in coordination with the Federal Aviation Administration."

- 2.2.2.1 Recreational flyers should be able to explain to an FAA inspector or law enforcement officer which CBO's safety guidelines they are operating under during any given flight. However, an operator does not need to be a member of a CBO to fly under its safety guidelines. The FAA maintains a website of officially recognized CBOs at https://www.faa.gov/uas/recreational_fliers/.

- 2.2.3 Section 44809(a)(3). "The aircraft is flown within the visual line of sight of the person operating the aircraft or a visual observer co-located and in direct communication with the operator."

- 2.2.3.1 In order to be operating within visual line of sight (VLOS), either the operator or a visual observer (VO) must be able to see the UA (with vision unaided by any device other than corrective lenses) throughout the entire flight to ensure it does not present a collision hazard to other manned aircraft or persons or property on the ground. The use of a VO is optional, but a VO enables the recreational flyer to look away from the UA for extended periods. The use of a VO is necessary if the recreational flyer wants to use first person view (FPV) devices, which allow a view from an onboard camera but limit the operator's ability to scan the surrounding airspace.

Note: For a VO to be considered co-located with the recreational flyer, the VO should be close enough to the recreational flyer to be able to communicate directly with him or her without the use of technological assistance and without creating a distraction to the recreational flyer.

- 2.2.4 Section 44809(a)(4). "The aircraft is operated in a manner that does not interfere with and gives way to any manned aircraft."

- 2.2.4.1 The recreational flyer is responsible for knowing, at all times, the position of the aircraft in relation to other aircraft; for maintaining a safe distance from other aircraft; and for giving the right-of-way to all manned aircraft.

2.2.5 Section 44809(a)(5). “In Class B, Class C, or Class D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport, the operator obtains prior authorization from the Administrator or designee before operating and complies with all airspace restrictions and prohibitions.”

2.2.5.1 The NAS includes both controlled and uncontrolled airspace. Recreational flyers must obtain specific airspace authorization from the FAA prior to operating UA in Class B, C, or D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport (controlled airspace). Recreational flyers do not need to obtain authorization prior to operating in Class G (uncontrolled airspace) below 400 feet above ground level (AGL).

2.2.5.2 Recreational flyers may use the FAA’s Low Altitude Authorization and Notification Capability (LAANC) to check for airspace restrictions and obtain authorization to fly in controlled airspace. LAANC provides automated, near real-time authorization for airspace authorization requests in most controlled airspace. See subparagraph 2.2.5.3 below for instances in which LAANC does not provide authorization. Recreational flyers can access LAANC through FAA-approved third-party UAS Service Suppliers (USS). A list of companies approved to offer LAANC services, as well as additional information on LAANC is available on the FAA website at https://www.faa.gov/uas/program_s_partnerships/data_exchange/. Recreational flyers may submit authorization requests up to 90 days prior to intended flight.

Note: Recreational flyers should not contact air traffic control (ATC) facilities to obtain airspace authorizations to fly in controlled airspace.

2.2.5.3 If a recreational flyer wants to fly near an airport in Class B, C, or D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport that are not serviced by LAANC, the recreational flyer should use the FAADroneZone website (<https://faadronezone.faa.gov/>) to request an airspace authorization. The recreational flyer should submit the request at least 90 days prior to the proposed flight to allow the FAA time to review the airspace and the information provided for the flight.

2.2.5.4 The FAA recommends that recreational flyers refer to the FAA’s interactive map on the UAS Data Delivery System at <https://udds-faa.opendata.arcgis.com/> to access information and graphical depictions regarding any UAS-specific flight restrictions. On the map, semi-transparent polygons depict airspace information. UAS flight restrictions are shown as red polygons. Recreational flyers are also responsible for complying with all special use airspace designations, including prohibited areas and restricted areas, as well as other special flight rules and TFRs published at <http://tfr.faa.gov/tfr2/list.html>, and Aeronautical Navigation Products (Charts) at https://www.faa.gov/air_traffic/flight_info/aeronav/productcatalog/.

- 2.2.5.5** The B4UFLY app is a useful resource for recreational flyers to use prior to operating their UA (whether in controlled or uncontrolled airspace). It provides critical airspace information to the user including the locations of airports, national parks, stadiums, special use airspace (including restricted and prohibited airspace), TFRs, other special flight rules, and more. More information on B4UFLY is provided at https://www.faa.gov/uas/recreational_fliers/where_can_i_fly/b4ufly/.
- 2.2.6** Section 44809(a)(6). “In Class G airspace, the aircraft is flown from the surface to not more than 400 feet above ground level and complies with all airspace restrictions and prohibitions.”
- 2.2.6.1** “Ground level” begins at the Earth’s surface and does not include man-made structures, trees, or any obstacle. For example, a UA engaged in recreational operations under 49 U.S.C. § 44809(a) may not be launched from a 10-story rooftop and fly up an additional 400 feet.
- 2.2.7** Section 44809(a)(7). “The operator has passed an aeronautical knowledge and safety test ... and maintains proof of test passage to be made available to the Administrator or law enforcement upon request.”
- 2.2.7.1** A list of FAA-approved test administrators for The Recreational UAS Safety Test (TRUST) is provided at https://www.faa.gov/uas/recreational_fliers/knowledge_test_updates/.
- 2.2.7.2** The proof of test passage may be in any format (e.g., paper or electronic) so long as it is readily accessible, legible, and can be presented to the Administrator or law enforcement upon request.
- 2.2.8** Section 44809(a)(8). “The aircraft is registered and marked in accordance with chapter 441...and proof of registration is made available to the Administrator or a designee of the Administrator or law enforcement upon request.”
- 2.2.8.1** Recreational flyers must register UA weighing more than 0.55 pounds (250 grams) at takeoff including those used in limited recreational operations. Owners of such UA may register electronically in accordance with part [48](#) through the FAADroneZone website at <https://faadronezone.faa.gov/> or through the part [47](#) paper-based process described at https://www.faa.gov/licenses_certificates/aircraft_certification/aircraft_registry/UA.
- 2.2.8.2** The owner of a small UA weighing more than 0.55 pounds (250 grams) that will be flown exclusively in limited recreational operations may obtain a single registration number for multiple UA by registering under part 48. However, any small UA operated under part 107, regardless of weight must have a unique registration number. Owners of UA more than 55 pounds must register each aircraft individually under part 47.

- 2.2.8.3** Owners of UA operated in limited recreational operations must mark all such UA with the registration number for the aircraft in accordance with the applicable requirements of 14 CFR parts [45](#) and 47. For small UA registered under part 48, § [48.205](#) requires that the marking be maintained in a condition that is legible, affixed in a manner that ensures it will remain affixed for the duration of each flight, and legibly displayed on an external surface of the UA.

CHAPTER 3. FAA-RECOGNIZED COMMUNITY-BASED ORGANIZATIONS

3.1 Community-Based Organizations (CBO).

3.1.1 A CBO is defined in 49 U.S.C. § [44809\(h\)](#) as a membership-based association entity that:

- “(1) is described in section 501(c)(3) of the Internal Revenue Code of 1986;
- (2) is exempt from tax under section 501(a) of the Internal Revenue Code of 1986;
- (3) the mission of which is demonstrably the furtherance of model aviation;
- (4) provides a comprehensive set of safety guidelines for all aspects of model aviation addressing the assembly and operation of model aircraft and that emphasize safe aeromodelling operations within the national airspace system and the protection and safety of individuals and property on the ground, and may provide a comprehensive set of safety rules and programming for the operation of unmanned aircraft that have the advanced flight capabilities enabling active, sustained, and controlled navigation of the aircraft beyond visual line of sight of the operator;
- (5) provides programming and support for any local charter organizations, affiliates, or clubs; and
- (6) provides assistance and support in the development and operation of locally designated model aircraft flying sites.”

3.2 Applying for CBO Recognition. An organization requesting CBO recognition by the FAA must provide all information necessary to demonstrate compliance with the statutory requirements of 49 U.S.C. § 44809(h). Paragraph 3.1.1 lists those statutory requirements. Paragraph [3.3](#) provides further guidance on the development of safety guidelines for CBO recognition. When submitting a CBO recognition application, the applicant should provide a point of contact for the CBO whom the FAA may contact to request additional information. The FAA estimates that it may take up to 90 days to process requests for recognition. All documentation and information should be submitted via the FAADroneZone website at <https://faadronezone.faa.gov/>.

3.2.1 The FAA will recognize an applicant that submits information demonstrating compliance with 49 U.S.C. § 44809(h) as a CBO. If the FAA recognizes the CBO, the FAA will issue a letter of recognition to the CBO evidencing the organization’s status as a recognized CBO. The FAA will maintain a list of recognized CBOs at https://www.faa.gov/uas/recreational_fliers/. If any information that served as the basis for the underlying recognition changes subsequent to recognition, including its safety guidelines, the recognition may no longer be valid. The FAA recommends that a recognized CBO coordinate with the FAA prior to making any such changes to ensure continued recognition. The FAA also emphasizes that under 49 U.S.C. § 44809(a)(2), a CBO’s safety guidelines are to be “developed in coordination with the Federal Aviation Administration.” Therefore, if a recognized CBO changes its safety guidelines without coordination with the FAA or no longer meets the requirements of 49 U.S.C. § 44809(h), the FAA will notify the CBO of the deficiency. If the CBO is unable to meet the

requirements of § 44809(a)(2) or (h) after such notification, the FAA will issue a letter of rescission and remove the CBO's name from the website.

- 3.2.2** Any organization, including institutions of higher education, elementary and secondary educational institutions, and JROTC programs, may request recognition as a CBO. However, they must meet all of the requirements for CBO recognition, including demonstrating recreational purpose. Educational programs in the elementary and secondary schools are not considered a recreational purpose under 49 U.S.C. § 44809 unless associated with a CBO, though such programs are considered recreational when conducted by institutes of higher education.

3.3 Safety Guidelines.

- 3.3.1** An organization seeking recognition as a CBO is required under 49 U.S.C. § 44809(h)(4) to provide a set of safety guidelines for all aspects of model aviation. The safety guidelines should address the assembly and operation of model aircraft, as well as emphasize safe aeromodelling operations within the NAS and the protection and the safety of individuals and property on the ground. CBOs should prepare and keep current safety guidelines setting forth the organization's procedures and policies for safe recreational operations of UA. The guidelines should be readily available to FAA personnel upon request.
- 3.3.2** The limitations identified in 49 U.S.C. § 44809(a) should serve as the baseline for developing safety guidelines. A CBO's guidelines should be consistent with the requirements addressed in 49 U.S.C. § 44809(a). A comprehensive set of safety guidelines may include topics that span beyond the requirements of 49 U.S.C. § 44809(a). Although the guidelines must be comprehensive, they need not discuss operations that are irrelevant to the CBO. For example, if a CBO is not engaged in a particular type of operation (e.g., FPV or turbine-powered flight), they would not be expected to develop safety guidelines related to that type of operation. An individual operating under a CBO's safety guidelines may only operate the types of operations addressed in those safety guidelines.

3.3.2.1 General Safety Measures and Practices.

- 3.3.2.1.1** Recommended Safety Guidelines. The FAA recommends that comprehensive safety guidelines should include at least the following:

1. *Adequate protections and mitigations to prevent the UA from causing harm to any person.* CBOs should consider addressing how they will mitigate hazards to avoid creating a risk to people. CBOs are encouraged to include the following safe practices in their safety guidelines: restrictions on operations over people, establishing buffer areas between an aircraft's planned flightpath and any people in the area, and limitations on ground access to areas for certain activities such as racing.
2. *Prohibition on modifying UA and the carriage of hazardous materials or weapons.* The FAA recommends that CBOs consider including a

restriction on customizing or modifying the aircraft in such a way that creates a hazard to the public or the NAS in their safety guidelines. CBOs are strongly encouraged to include a statement reminding operators that they must comply with applicable regulations for the carriage of hazardous materials. Refer to applicable provisions of the Hazardous Materials Regulations, 49 CFR parts [171](#) through [180](#). The FAA also recommends that CBOs remind operators that Federal law prohibits operating a UA that is equipped or armed with a dangerous weapon unless authorized by the Administrator. Refer to Section 363 of the FAA Reauthorization Act of 2018.

3. *Prohibition on engaging in careless or reckless behavior.* CBOs are encouraged to include information in their guidelines on avoiding careless or reckless behavior. The FAA recommends including information on the five hazardous attitudes in aeronautical decision making (refer to the [Pilot's Handbook of Aeronautical Knowledge](#), Figure 2-4) and the "Dirty Dozen" human behaviors in aircraft maintenance (refer to <https://www.faa.gov/files/gslac/library/documents/2012/Nov/71574/DirtyDozenWeb3.pdf>).
4. *Airspace restrictions and prohibitions.* The FAA recommends that safety guidelines provide information to recreational flyers on how to become aware of all restricted and prohibited airspace. The guidelines should also emphasize that Federal law requires each member to comply with all airspace restrictions and prohibitions applicable to the airspace in which the operation will occur. Refer to 49 U.S.C. § 44809(a)(5) and (6).
5. *Preflight safety.* To mitigate hazards, the FAA encourages CBOs to include in their guidelines, as appropriate, information concerning preflight assessments, flight planning, hazard identification techniques, and scanning techniques for aircraft and other people entering an area of operation. AC [107-2](#), Appendix E, Sample Preflight Assessment and Inspection Checklist, provides a detailed example of a preflight checklist that CBOs may consider adapting for their particular needs. CBOs may also choose to develop a through-flight or turnaround checklist for preflight inspections between successive flights that are flown back-to-back. Such a preflight checklist could cover those items that should be checked before flight, such as confirmation of general condition or that control surfaces are functioning.
6. *In-flight safety.* The FAA recommends that guidelines for in-flight safety remind recreational flyers to assess the performance of the UA continually; monitor the strength of command and control links; watch for changing weather conditions; and watch for unexpected people or aircraft in the area of operation. Additionally, the FAA recommends that guidelines instruct recreational flyers to be familiar with the automated features a UA may have, and how the UA would behave when those features are activated. For instance, it is important that operators know that a return-to-home protocol on a UA could initiate a straight-line path

toward the person operating it that could cross over people or possibly strike an obstacle such as a tree or power lines.

7. *Post-flight safety.* Guidelines for post-flight inspection may include encouraging recreational flyers to review the flight and consider whether any unplanned events occurred that presented a risk. Guidelines may also include recommendations for safely securing UA between flights to include removing batteries and protecting fragile parts from wear and tear per the manufacturer's recommendations (if applicable).

3.3.2.2 Regulatory and Statutory Compliance.

- 3.3.2.2.1 Recommended Safety Statement. The FAA encourages CBOs to include in their guidelines a safety statement that reminds recreational operators that they must comply with applicable FAA regulations and other Federal laws, in addition to the CBO's safety guidelines.

3.3.2.3 First Person View (FPV).

- 3.3.2.3.1 Recommended Safety Guidelines. If a CBO supports FPV flying in recreational operations, the CBO should include in its comprehensive safety guidelines, a list of guidelines for operating UA under FPV. The following suggested guidelines are provided as examples to assist CBOs and can be tailored to fit a CBO's particular needs.
 1. Guidelines that FPV flyers be proficient in operating their UA without FPV equipment prior to starting FPV flights.
 2. Guidelines for preflight inspections of the FPV device's video, control, power source, and mechanical systems before each flight.
 3. Guidelines for VOs during FPV operations to watch the UA, and the surrounding airspace at all times to ensure safe operations. Guidelines for the responsibilities of VOs may include guidance, such as informing the observer how to maintain VLOS with the aircraft at all times, scan the surrounding airspace for hazards, and be able to see the aircraft with unaided vision, except in the case of vision that is corrected by the use of eyeglasses or contact lenses. Vision aids, such as binoculars, may be used only momentarily to enhance situational awareness.
 4. Guidelines about co-location of VOs with the FPV flyer, such as requiring VOs to be in direct communication with the FPV flyer without the use of technological assistance and without creating a distraction to the recreational flyer.
 5. Guidelines for the ability of the FPV flyer to see the aircraft throughout the entire flight.
 6. Guidelines for communications, such as requiring that the FPV flyer and VOs have preplanned communications and procedures to ensure the UA

remains under control and within VLOS during any event when the safe operation of the aircraft is in question.

7. If the CBO wishes to address FPV operations for UA more than 55 pounds in its safety guidelines, the FAA recommends the CBO develop guidelines specific to such operation.

3.3.2.4 Small UA Maintenance, Inspections, and Minimum Conditions for Safe Operation.

3.3.2.4.1 Recommended Safety Guidelines. A comprehensive set of safety guidelines should include guidance for UA maintenance, inspections, and minimum conditions for safe operations to ensure recreational flyers are taking proper care of their UA between flights. The following are suggestions for guidance that a CBO may provide in its safety guidelines.

1. Guidance that a UA and its associated elements should be maintained in accordance with the manufacturer's instructions. For homebuilt UA or those without manufacturer instructions, safety guidelines should provide general maintenance guidance. Refer to AC 107-2, Paragraphs 7.2.1.1 and 7.3.5, Benefits of Recordkeeping, for further recommendations.
2. Guidance regarding frequency of checking for software updates and updating UA software prior to flight.
3. Guidelines for checking flight-critical systems (e.g., rotors, battery, controls) for damage prior to flight and guidance to repair or replace those discrepancies if any damage is found.
4. Guidance to test control links prior to flight and to not attempt flight if command and control signal strength is, or is anticipated to be, inadequate for the duration of the flight.
5. Guidelines for moving parts, such as servos and rotors to move freely or respond to controls as expected.
6. Guidance for all systems to have adequate energy supply to complete the planned flight safely.
7. Guidelines that guidance systems and instruments (e.g., Global Positioning System (GPS), compass, altimeter) must be accurate and performing as expected.
8. Guidance that automated features (e.g., return to home, autoland) are functioning correctly and as expected.
9. Guidelines for carrying external loads, such as how external loads should be attached to the aircraft, the recommended weight limit of external loads, and that such loads do not negatively affect the balance or control of the aircraft.
10. Guidelines for flying site suitability, such as checking the expected flight path for other people, aircraft, and obstacles.

Note: When addressing maintenance and inspections in comprehensive safety guidelines, CBOs may build on the recommendations of the manufacturer. A sample inspection chart can be found in AC 107-2, Appendix C, Small UAS Maintenance and Inspection Best Practices.

3.3.2.5 Night Flight. Under 49 U.S.C. § 44809(a)(3), recreational flyers or VOs must maintain VLOS throughout the flight, including when operating at night. For UA operations at night, the FAA strongly recommends CBOs develop comprehensive safety guidelines that include equipping UA with anti-collision lights that can be seen from 3 statute miles away and to arrange lights on the UA in such a way that allows recreational flyers to determine the orientation and flight path of the aircraft. Alternatively, the safety guidelines can also permit recreational flyers to conduct operations at night without requiring UA lighting in areas that are sufficiently illuminated so that recreational flyers can maintain VLOS of the aircraft throughout the flight and identify any potential ground or airborne hazards. Lastly, night flight presents visual perception challenges to aircraft operators. CBOs are highly encouraged to include guidelines to make recreational flyers aware of these physiological challenges for night operations. For an explanation of the physiological challenges of night operations, CBOs may reference [FAA-H-8083-3C](#), Airplane Flying Handbook, Chapter 11, Night Operations.

3.3.2.6 Determining a Recreational Flyer’s Medical Condition.

3.3.2.6.1 Recommended Safety Guidelines. Comprehensive safety guidelines should include certain criteria that recreational flyers should consider in ascertaining whether they are fit for flight prior to conducting any limited recreational aircraft operation. For example, in their guidelines, CBOs can address operating a UA, serving as a VO, or participating in the operation of a UA if the person knows, or has reason to know, that they have a physical or mental condition that would interfere with the safe operation of the UA.

3.3.2.6.2 Alcohol or Drug Use. The FAA highly recommends that comprehensive safety guidelines address how the use of alcohol or drugs would interfere with the recreational flyer’s ability to operate the UA safely.

3.3.2.6.3 IMSAFE. The FAA also recommends the inclusion of the IMSAFE checklist for recreational flyers in CBO guidelines:

- **Illness**—Is the recreational flyer suffering from any illness or symptoms that might affect the safe operation of the UAS?
- **Medication**—Is the recreational flyer taking any drugs (prescription or other) that might affect the safe operation of the UAS?
- **Stress**—Is the recreational flyer experiencing any psychological or emotional factors which might adversely affect his or her performance?

- **Alcohol**—Has the recreational flyer been drinking within the last 8 hours? Depending on the amount of alcohol consumed, full metabolization can take up to 24 hours. Recreational flyers should be aware that as little as one ounce of liquor, one bottle of beer, or four ounces of wine can impair flying skills.
- **Fatigue**—Has the recreational flyer received sufficient sleep and adequate rest in the recent past?
- **Emotion**—Is the recreational flyer emotionally upset?

3.3.2.7 Emergency Procedures.

3.3.2.7.1 Recommended Safety Guidelines. An emergency is the actual or impending loss of control of a UA or violation of an operational limitation. The FAA recommends that comprehensive safety guidelines address potential in-flight emergencies involving recreational flying, such as:

1. Sustained loss, weak or intermittent radio signals, control signals experiencing interference, or a UA not responding predictably to control inputs.
2. Loss of power or propulsion.
3. Loss of navigation (GPS) or loss of sight of the UA.
4. Flight instruments losing performance or displaying incorrect information.
5. Unanticipated people or aircraft entering the area of operation.
6. Parts or attachments on the UA becoming loose or breaking off.
7. Electrical arcing, or battery or component fires.
8. Unexpected weather (e.g., high winds, sudden storms, fog).

3.3.2.7.2 Responsibility for Safety. The FAA recommends that the comprehensive safety guidelines emphasize that the recreational flyer is responsible for the safety of the flight during emergencies. While CBOs may encourage use and familiarization with common automated recovery features (e.g., return to home, autoland), such features may not be sufficient to address an emergency. While conducting a hazard identification assessment or risk assessment is not necessary for developing acceptable safety guidelines, some CBOs may find it helpful to consult the recommended methods for assessing potential hazards and planning appropriate emergency procedures found in AC 107-2, Appendix A, Risk Assessment Tools.

3.3.2.8 **Safety Incident Reporting Program.** To support and promote a safety culture among all CBOs and recreational flyers, the FAA recommends that comprehensive safety guidelines address safety incidents. For the purpose of this AC, a “safety incident” is defined as an occurrence associated with the operation of the aircraft that affects or could affect the safety of operations.

CBOs may consider including a safety incident reporting program for recreational flyers. Gathering such data may provide substantial benefits to CBOs, as the data would enable better understanding of the trends and risks that may be posed by UA operations. CBOs could then use the data to identify appropriate mitigations

3.3.2.9 Safety Guidelines for Certain UA Operations. In addition to general guidelines addressed throughout this AC, comprehensive safety guidelines should include safety procedures, standards, limitations, and guidelines for specific types of operations that will be conducted by recreational flyers operating under that CBO's safety guidelines, such as, but not limited to:

1. UA more than 55 pounds including the weight of anything attached to or carried by the aircraft.

Note: CBO standards and limitations for UA more than 55 pounds must be approved by the FAA. Large UA may only be operated from a fixed site. Refer to 49 U.S.C. § 44809(c)(2).

2. Turbine engine operations.
3. Combat simulations.
4. Racing operations.
5. Aerobatics.
6. Training.
7. Research conducted by institutions of higher education.

Note: Whether or not the specific operations listed here are considered recreational depends on the specific situation. Each individual pilot bears the responsibility for compliance with the 49 U.S.C. § 44809(a)(1) requirement that the operation must be conducted for a recreational purpose.

3.4 Requests for Fixed Sites.

3.4.1 Interested parties may request authorization for a fixed site by submitting their request through the FAADroneZone website at <https://faadronezone.faa.gov/>.

3.4.2 Compliance with the requirements of part [89](#) for remote identification is required at fixed sites. For more details, see paragraph [1.7.4](#).

3.4.3 As stated in paragraph [3.1.1](#) above, a CBO “provides assistance and support in the development and operation of locally designated model aircraft flying sites.”

3.4.4 A CBO does not have to request the establishment of a fixed site as part of the CBO recognition process. However, a CBO may submit a request to the FAA for the authorization of a fixed site. When a fixed site has received FAA authorization,

recreational flyers will be able to use the site to conduct recreational operations using small UA or UA more than 55 pounds, or participate in a CBO-sanctioned event in such controlled airspace (i.e., Class B, C, or D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport), without additional airspace authorizations. These operations are subject to the parameters of a mutually agreed upon operating procedure with the ATC facility. Interested parties may request authorization for a fixed flying site by submitting their request through the FAADroneZone website at <https://faadronezone.faa.gov/>. Any request submitted to the FAA for the authorization of a fixed site should include the following information:

1. Latitudes and longitudes that define the boundaries of the proposed site. Text, picture, and geographic files are generally acceptable file formats for depicting the requested area.
2. Maximum altitudes requested for operations at the site.
3. Hours of operation at the site.
4. Description of any unique operations, if applicable, including:
 - Large (more than 55 pounds) UA operations.
 - Turbine engine operations.
 - Combat simulations.
 - Racing operations.
 - Aerobatics.
5. Airspace classification.
6. Nearest airport.
7. Photos of site location.
8. Previous Letter of Agreement or Authorization, as applicable.

3.4.5 A request submitted to the FAA to allow operations at a fixed site should clearly indicate the kinds of operations anticipated to take place at the fixed site, such as aerobatics or air races, and include any information pertinent to the operations, such as additional safety procedures. These safety procedures should address the kinds of operations anticipated and how they will be followed at the fixed site. The FAA will review the submitted documents and determine whether it is appropriate to issue an authorization for the fixed site. If the FAA needs additional information, the FAA will contact the requester.

3.5 CBO-Sponsored Events.

3.5.1 Authorization for CBO-Sanctioned Event(s).

3.5.1.1 If a planned, UA-only event will occur at a fixed site in Class B, C, or D airspace or within the lateral boundaries of the surface area of Class E airspace designated for an airport, the CBO must request a fixed site authorization for the time and place of the event. Refer to 49 U.S.C.

§ 44809(c)(1). Requesters should submit all of the site-specific information in paragraph 3.4.4 above and the dates and duration of the event via the FAADroneZone website (<https://faadronezone.faa.gov/>) at least 90 days in advance of the event for authorization. CBOs intending to conduct events in Class G airspace that may exceed 400 feet AGL must contact the FAA for further information.

- 3.5.1.2** UA-only aviation events conducted under the 49 U.S.C. § 44809 exception, such as UA races or aerobatic displays, must adhere to CBO safety guidelines developed in coordination with the FAA or in the case of operations involving UA weighing more than 55 pounds, approved by the FAA. If a CBO wishes to conduct such sanctioned events periodically, the FAA recommends that the CBO develop safety guidelines for CBO-sanctioned events as part of its guidelines submitted for recognition. For any public event, the FAA strongly recommends including procedures to protect nonparticipants from all UA participating in the event and identify persons responsible (e.g., safety officer, contest director) for ensuring the safety of the operations conducted onsite.

Note: As mentioned in paragraph 2.2.1, the FAA will not predetermine that all participants in an event are compliant with 49 U.S.C. § 44809(a). Each individual pilot maintains responsibility for compliance with the 49 U.S.C. § 44809(a) requirement for recreational purpose.

- 3.5.1.3** When a CBO makes an application for a sanctioned event at a fixed site in DroneZone, the CBO should provide its safety guidelines for the sponsored events as part of the application. If a CBO has not incorporated sanctioned events into its safety guidelines, then that CBO should include in its application how it will conduct the event safely protecting nonparticipants from all UA participating in the event.

Advisory Circular Feedback Form

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by contacting the General Aviation and Commercial Division at 9-AFS-800-Correspondence@faa.gov or the Flight Standards Directives Management Officer at 9-AWA-AFB-120-Directives@faa.gov.

Subject: AC 91-57C, Exception for Limited Recreational Operations of Unmanned Aircraft

Date: _____

Please check all appropriate line items:

An error (procedural or typographical) has been noted in paragraph _____
on page _____.

Recommend paragraph _____ on page _____ be changed as follows:

In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)

Other comments:

I would like to discuss the above. Please contact me.

Submitted by: _____

Date: _____