



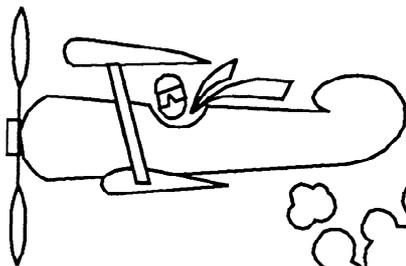
U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

# Advisory Circular

AC 91-45C

DATE 2/1/90

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**INTRODUCING**

**WAIVERS:**

**AVIATION EVENTS**

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

# Advisory Circular

**Subject: WAIVERS: AVIATION EVENTS**

**Date: 2/1/90**  
**Initiated by: AFS-20**

**AC No: 91-45C**  
**Change:**

**1. PURPOSE.** This Advisory Circular (AC) provides prospective aviation event sponsors and other interested parties with information necessary to assist in planning and conducting a safe aviation event. In addition, it provides information on the application process for a Certificate of Waiver or Authorization.

**2. CANCELLATION.** AC 91-45B, Waivers - Airshows/Contests/Races, dated August 5, 1981, is cancelled.

**3. RELATED FAR SECTIONS.** Parts 61, 91, 103, and 105.

**4. FORMS AND REPORTS.** Samples of the following forms are provided in Appendix 1.

a. FAA Form 7711-2, Application for Certificate of Waiver or Authorization. This form can be obtained from the local FAA Flight Standards District Office (FSDO).

b. FAA Form 7711-1, Certificate of Waiver or Authorization, will be issued by the FAA FSDO upon approval of FAA Form 7711-2.

**5. BACKGROUND.** Numerous waivers are issued each year by the Federal Aviation Administration (FAA) for the purpose of aviation events or aerial demonstrations. These waivers are issued based on the FAA policy that anytime the agency determines a proposed event will be in the public interest in terms of safety and environmental concerns, a waiver will be issued predicated on specific requirements of the event. Regardless of the purposes for which an aviation event is sponsored, events or show sites judged unsafe shall not be accepted for waiver or author-

ization consideration. Based on the foregoing, this AC is intended to explain many of the requirements necessary when considering the show site, facilities, the level of competence of participants, waivers and/or authorizations required, and other items of concern to the prospective aviation event sponsor.

**6. DEFINITIONS.** Many terms used in this AC are unique to aerial demonstration/aviation events; therefore, the following definitions shall enhance the understanding of their application:

a. *Aerobatic Flight.* The FAA has determined that for purposes of an aviation event, an aerobatic maneuver means an intentional maneuver in which the aircraft is in sustained inverted flight or is rolled from upright to inverted or from inverted to upright position. All standard aviation event aerobatic maneuvers such as slow rolls, snap rolls, loops, Immelmans, cuban eights, spins, hammerhead turns, etc., may not be performed over congested areas or over spectators. Steep banked, level, climbing, or descending turns necessary during maneuvering between aerobatics are not considered to be aviation event aerobatic maneuvers. Normal positioning turns for high performance aircraft operated by the military regardless of angle or bank or pitch attitude, are not considered to be aviation event aerobatic maneuvers. Normal maneuvers, such as steep turns, involved in air racing are not considered aerobatic.

b. *Aviation Events* include airshows, air races, aerobatic contests, parachute demonstration jumps, practice areas designated for aerobatic proficiency or training, and balloon meets and races. Most events are held at or immediately

adjacent to an airport. An increasing number, however, are held offshore (within gliding distance of land), over water, in the vicinity of a state fairground, or at other off-airport locations. Aerobatic school activities or aerobatic meets may occur which are not aviation events, contests, or races, even though a waiver must be issued. At these school activities or meets that are not advertised as aviation events, it may not be necessary to provide public aviation event policing and emergency facilities.

c. **Certificate of Waiver or Authorization.** FAA Form 7711-1, Certificate of Waiver or Authorization, is issued after proper application and approval, for the purpose of providing **TEMPORARY RELIEF** from certain designated Federal Aviation Regulations (FAR).

d. **Control Point.** A specified location where the show sponsor, a designated representative, or safety director manages the aviation event. The communications capability necessary to control the aviation event must also be located at this site.

e. **Crowd Line.** A physical barrier or a line marked on the ground which, with added policing, serves as a restraining line. The crowd line is placed at a specified distance from the showline. The barrier must prevent spectators or other nonparticipants from encroaching upon the showline.

f. **Inspector-in-Charge.** The FAA inspector-in-charge is an individual who conducts the feasibility study (if needed), participates in the preseason evaluation meeting, evaluates the application for waiver or authorization, recommends issuance or denial, and who conducts the surveillance of the aviation event.

g. **Markers** used in balloon competition tasks for dropping or marking targets are small flour bags, with a maximum weight of 3 ounces and a fabric tail 4 inches wide and 6 feet long. The international standard for markers is 100 grams maximum weight, with a tail 10 cm wide

and 2 meters long. Markers made to this specification should not injure persons or damage property.

h. **The Primary Spectator Area** is the main area provided by the sponsor for spectator use. This is the area where the public can generally be expected to view the airshow.

i. **The Secondary Spectator Area** may be any other area where persons have a natural tendency to gather to observe the event. This is generally an area opposite the showline from the primary spectator area or a road, etc. Secondary Spectator Areas should be agreed upon by the show sponsor and the FAA inspector-in-charge before the aviation event begins. These are areas where it is usually not possible to eliminate the presence of people.

j. **Show Center** is a reference point along the showline denoting the center of the operating area.

k. **A Showline** is a prominent, readily-visible ground reference such as a river, runway, taxiway, canal, breakwater, road, or any straight line that enhances pilot orientation during aerobatic routines (Appendix 1, Figure 1). The showline also serves as the horizontal axis for the show. Snow fences spread flat on the ground may also make acceptable references depending on the visual contrast. Lines of parked buses, cars, or boats, although less desirable, may be the only alternatives when natural showlines are not available.

l. **A Show Season** generally runs from April through October of a given year. Geographical and climatological circumstances can lengthen or shorten the show season.

m. **A Waiver** is an official document issued by the FAA which authorizes certain operations of aircraft in deviation from a regulation, but under conditions ensuring an equivalent level of safety.

## 7. DISCUSSION.

a. **Scope of Waivers.** Waivers vary insofar as the rules that are requested to be waived. Some events require nothing more than waiving FAR § 91.71(d) to permit aerobatic flight at less than 1,500 feet above the surface. Others may require waiving aircraft speed limitations, minimum safe altitudes, or limitations while operating in the vicinity of airports or even within a Terminal Control Area (TCA).

b. **A request for a waiver of the basic Visual Flight Rules weather minimums** specified in FAR § 91.105 shall be considered only --

(1) *In areas where the entire event can be conducted with Air Traffic providing separation between participating aircraft and nonparticipating aircraft, and*

(2) *When provisions are made to advise participants of uncontrolled aircraft that may present a hazard. This does not imply that Air Traffic assumes the responsibility for providing separation of performing aircraft.*

c. **Regulations Affected.** A sponsor should consider factors that directly affect the rules to be waived. These include show site, type of aircraft maneuvers to be performed, etc. Sections of the FAR that should be waived for some other events in certain locations or that are more complex are:

(1) FAR § 91.70, Aircraft speed.

(2) FAR § 91.79(b) and (c), Minimum safe altitude.

(3) FAR § 91.85, Operating on or in the vicinity of an airport.

(4) FAR § 91.87, Operations at airports with operating control towers.

(5) FAR § 91.89, Operations at airports without operating control towers.

(6) FAR § 91.90, Terminal control areas.

d. **Regulations that May or May Not Be Waived.** FAR § 91.79(a) **SHALL NOT BE WAIVED FOR AERIAL DEMONSTRATION PURPOSES.** FAR §§ 91.79 (b) and (c) may be waived only when the following conditions are met.

(1) *A waiver of the requirements of FAR §§ 91.79(b) and (c) is issued for aerial demonstrations by the U.S. Air Force "Thunderbirds," the U.S. Navy "Blue Angels," tactical aircraft demonstrations approved by the appropriate military command, and the Canadian "Snowbirds." These performers or teams have Command-approved maneuver packages that are submitted to and approved by the FAA. These maneuver packages describe normal routines that do not call for aviation event aerobatic maneuvers over congested areas, over persons, or over the primary or secondary spectator areas.*

(2) *A waiver may be issued to performers, other than those covered in the preceding paragraph, to transition a congested area at less than the minimum altitudes described in FAR §§ 91.79(b) and (c) in nonaerobatic flight. The ingress and egress to the aerobatic/fly-by area must be in compliance with the following:*

(i) *Aerobatic demonstration --*

(A) *During ingress (Appendix 1, Figure 2) to the aerobatic area from flight above a congested area, the pilots are expected to leave the altitude being flown as described above so that a smooth transition may be made to the performance altitude in the aerobatic area. Steep approaches may be made; however, in no case shall the descent angle to the aerobatic area be less than that required for a normal approach for a landing for the aircraft involved.*

(B) *During egress (Appendix 1, Figure 3) from the aerobatic area for flight above a congested area, the pilots are expected to climb*

at a rate consistent with a safe operation or the best angle of climb pitch attitude for the aircraft involved. If prolonged flight over a congested area is required, the climb shall be continued to at least 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft. During the positioning turns above the congested area, there shall be no aviation event aerobatic maneuvers performed.

(ii) *Fly-by Demonstrations --*

(A) *During ingress* (Appendix 1, Figure 2) to the fly-by area from flight over a congested area, pilots are expected to leave the altitude flown above the congested area so that a smooth transition may be made to the fly-by altitude in the fly-by area. Steep approaches may be made; however, in no case shall the descent angle to the fly-by area be less than that required for a normal approach for a landing for the aircraft involved.

(B) *During egress* (Appendix 1, Figure 3) from the fly-by area for flight over a congested area, the pilots are expected to climb at a rate consistent with a safe operation or the best angle of climb pitch attitude for the aircraft involved. If prolonged flight is to be conducted above a congested area, the climb shall be continued to at least 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet from the aircraft. During positioning turns above a congested area there shall be no aviation event aerobatic maneuvers performed. The showline for fly-by demonstrations shall not be closer than 500 feet to the primary or secondary spectator areas.

e. *Performers must determine, at each show site*, that geographical/atmospheric conditions allow performance within the limitations of their aircraft. If there are obstructions or atmospheric conditions, such as density altitude, which do not allow a safe transition over a congested area or back into the performance area, the operation may be allowed if the performers raise the altitude of the aerobatic or fly-by maneuver so that the ingress and egress over the congested area can be safely accomplished.

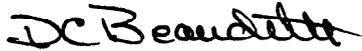
f. *Ultralight Vehicle Operations.*

(1) *Any ultralight that meets the applicability* of FAR § 103.1 may be operated as an ultralight vehicle in accordance with FAR Part 103 or the operator may elect to certificate the vehicle and operate under applicable aircraft regulations. It is important to remember that an ultralight vehicle that has been certificated as an aircraft and no longer operated under FAR Part 103 must meet the same requirements as a conventional aircraft. This includes aircraft operational limitations, pilot certification, and statement of aerobatic competency.

(2) *Aerobatic flight demonstrations by ultralight vehicles* shall be included on an FAA Form 7711-1, with appropriate special conditions, only when a statement of determination that the vehicle and the operator are able to conduct the proposed demonstration without creating a hazard to persons and property on the surface has been submitted with the application. The statement should contain a summary of how the determination was made.

(3) *Regardless of the category (aircraft/ultralight vehicle)*, aerobatic demonstrations by ultralights must meet the separation standards for aviation event performances that are applica-

ble to conventional aircraft with a level flight cruise speed that is less than 156 knots using 75 percent power.



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