



At a Glance

Aviation is a tightly regulated endeavor. How do air show organizers bring excitement, entertainment, and aerospace education to the public in such a regulatory environment? It takes organizers, performers, regulators...and lawyers.

AIR SHOWS! Bringing the Thunder to Michigan's Skies

By **Stephen L. Tupper and Kevin Walsh**

When you think of air shows, you think of intrepid aerobatic pilots flying upside down and jets whipping down the show line to delight crowds in places like Detroit, Willow Run, Traverse City, Battle Creek, Gaylord, and Selfridge Air National Guard Base. And you're right!

But aviation is a tightly regulated endeavor. How do air show organizers bring excitement, entertainment, and aerospace education to the public in such a regulatory environment? It takes organizers, performers, regulators...and lawyers.

The regulations and the waiver

Almost all aviation in the United States is governed by the Federal Aviation Regulations (FARs), particularly FAR Part 91.¹ The FARs regulate nearly every aspect of aviation, including who can do what, with what aircraft, where, and how.

It won't surprise anyone that much of the flying at air shows would ordinarily violate the FARs. After all, it's hard for a wing walker to perform while complying with the FAR regarding safety belts.² Or for an aerobatic performer to comply with the FAR requiring aerobatic flight to remain at least 1,500 feet above the ground.³ Or for a show over the Detroit River to comply with the FAR requiring everyone to be at least 1,000 feet above the tallest object within 2,000 feet laterally⁴ — the Renaissance Center is 750 feet tall and the U.S. side of the Detroit River is only 1,000 feet wide. And there are other, more esoteric considerations like the speed restriction to 200 knots in the lower parts of the area surrounding Detroit Metropolitan Wayne County Airport⁵ or prohibitions on certain activities near the center line of federal airways, which are invisible highways in the sky.⁶

Without some relief from these regulations, air shows would be too quiet, too high to be visible, and — let's face it — unexciting. Air show organizers apply to the FAA for waivers of

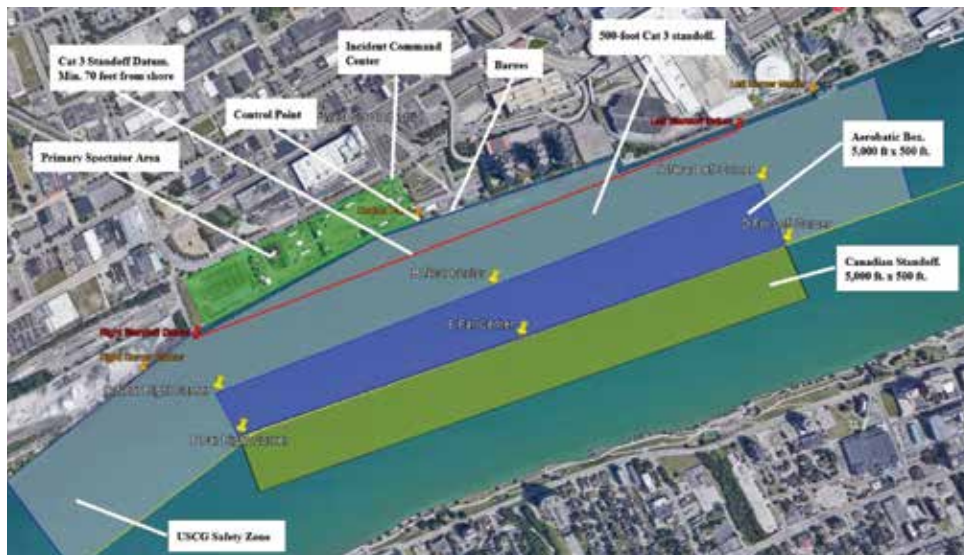


Diagram of the Detroit Tuskegee Airmen River Days Airshow box. The aerobatic area is 5,000 feet long and 500 feet wide with a minimum 500-foot standoff from the U.S. shore to the north and a 500-foot standoff in Canadian waters to the south. The spectator area is located at Ralph C. Wilson Jr. Centennial Park, the green area on the north side of the Detroit River. This is one of more than 20 graphics that are part of the show's annual FAA waiver application.

parts of the FARs. FAR 91.905⁷ provides a list of the sections of FAR Part 91 that the FAA can waive. Air show organizers select from that list and apply to their local Flight Standards District Offices for waivers.⁸

FAA certificates of waiver generally include waivers of between 6 and 15 sections, or parts of sections, of the FARs, including the examples above about seat belts, speed, and altitude. They also usually come with a number of special provisions that surround and backstop those waived FAR sections.⁹ Special conditions include things like requirements that aerobatic and formation pilots hold industry-standard certifications or alternative definitions of aerobatic flight. To (dramatically) oversimplify: FAR section waivers giveth and the special provisions taketh away.

Where safety and design meet the regulatory environment

Air shows in the United States owe a great deal of their safety to the design of the performance space and rules about what performers can do. For example, airplanes must always be at least 500 feet from spectators; airplanes that can reach 157–245 knots (181–282 mph) in level flight must be at least 1,000 feet away to fly aerobatically, and airplanes that can fly faster than that (e.g., the Air Force Thunderbirds) must keep a 1,500-foot distance.¹⁰ Additionally, “[p]erformers are prohibited from directing energy toward the crowd, which means [a]erobatic maneuvers that, in the event of a catastrophic failure, [would cause a part of the aircraft to] contact the surface at or inside the primary spectator area.”¹¹

The restrictions began with an air show safety program under the Civil Aviation Administration and the Civil Aeronautics

Board (predecessors to the FAA) after a 1951 accident killed several spectators in Colorado.¹² Since then, the improved safety focus and regulatory activities have applied at nearly 20,000 air show performances attended by 600 million spectators, and no spectator fatality has occurred at an air show in the United States.¹³

The role of industry SMOs

It is not uncommon for governmental agencies to look to non-governmental standards maintenance organizations (SMOs) for industry expertise and certification.

The International Council of Air Shows (ICAS), founded in 1967 and incorporated in 1976,¹⁴ is the umbrella body for North American air shows. The FAA looks to ICAS as the SMO for aerobatic performers (in the form of its Aerobatic Competency Evaluator program, which issues statements of aerobatic competency), pyrotechnicians (certifying “shooters in charge”), and air bosses (individuals named in the FAA waiver and charged with the safe conduct of each air show.) Other organizations, such as Formation and Safety Team signatories, issue credentials for performers who fly in formation.

SMO programs work. ICAS assumed responsibility for the Aerobatic Competency Evaluator program after the 1990 air show season. From 1988–1990, performer fatalities averaged more than 12 per year. During the subsequent 21 years, fatalities declined to an average of fewer than 3.5 annually.¹⁵

Meet the new boss

Even after decades of evolving safety programs, SMOs continue to change the industry and regulatory environment while

cooperating with the FAA. As a recent example, before the 2020 air show season, no specific credential was required in order to be an air boss — the person who directs operations during an air show. Within the last five years, ICAS has developed an air boss recommendation program that involves a knowledge test, recommendations, observations, and other processes.¹⁶ The FAA accepted the program in late 2019. ICAS recommends candidates who have completed the program requirements and the FAA issues letters of authorization to them. The FAA now accepts air show waiver applications only from persons holding the appropriate air boss letter of authorization.¹⁷

But, to some extent, same as the old boss

The FAA is a many-headed creature, and air show organizers deal with more than just the Flight Standards District Office. Organizers frequently must interact with the parts of the FAA that issue temporary flight restrictions (no-fly zones that keep other aircraft away from the air show), make radio spectrum assignments for control of ground and air operations, and air traffic control managers at the local airport and terminal and approach areas.

Beyond the FAA, organizers must interact with the Federal Communications Commission to obtain radio licenses to use assigned control frequencies; local governments (which might or might not be fans of the air show); law enforcement; fire personnel; ambulance providers (both those serving the show and air ambulance operators that operate within the airspace); and others.

The same deal-making and team-building skills that serve lawyers well in practice serve them well in the world of air shows. Even more than in law practice, the air show industry runs on reputation for skill and safety-mindedness and the ability to command the respect of a room of pilots, regulators, and first responders at a briefing.

Conclusion

The next time you attend an air show, have fun and be inspired, but also take a moment to think about the regulatory and operational work required to stage the event. The best aviation professionals are all about safety culture and making heavily regulated and complicated things look easy. Air shows are their love letter to those ideas and the public that comes out to watch.

We know. We organize and present air shows. And we do it because, first and foremost, we're fans just like you. ■



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ENDNOTES

- 14 CFR 91.1 *et seq.*
- 14 CFR 91.107.
- 14 CFR 91.303(e).
- 14 CFR 91.119.
- 14 CFR 91.117(c).
- 14 CFR 91.303(d).
- 14 CFR 91.905.
- FAA Order 8900.1, vol 3, ch 6, *Issue a Certificate of Waiver or Authorization for an Aviation Event* (May 15, 2015), available at <https://fsims.faa.gov/wdocs/8900.1/v03%20tech%20admin/chapter%2006/03_006_002.htm> [<https://perma.cc/YGV8-SQXG>] and updated by National Policy N 8900.1526 (October 10, 2019) [available at <https://www.faa.gov/documentLibrary/media/Notice/N_8900.526.pdf> [<https://perma.cc/U9UW-SLTA>]]. All websites in this article were accessed July 4, 2021.
- FAA Order 8900.1, vol 3, ch 6, § 3-155.
- FAA Order 8900.1, vol 3, ch 6, Table 3-1A.
- FAA Order 8900.1, vol 3, ch 6, § 3-148(l)(1).
- Colorado air show crash killed 20 in 1951*, Denver Post (September 16, 2011) <<https://www.denverpost.com/2011/09/16/colorado-air-show-crash-killed-20-in-1951/>> [<https://perma.cc/9SGP-VWNN>].
- Cudahy, *Remarks to the National Transportation Safety Board* (January 10, 2012) (available from the author). See also Negroni, *Air Shows Are Safe Enough, Transport Safety Panel Is Told*, The New York Times (January 10, 2011). <<https://www.nytimes.com/2012/01/11/us/air-shows-need-no-new-rules-transport-safety-board-is-told.html>>. Note that the September 16, 2011, fatal accident at the Reno Air Races was part of an air race, not an air show.
- The History of the International Council of Air Shows*, International Council of Air Shows <<https://airshows.aero/CMS/History>> [<https://perma.cc/C62S-WSSN>].
- Id.*
- Air Boss Recognition Program*, International Council of Air Shows (2018) (available from the author).
- FAA Order 8900.1, vol 5, ch 9, § 6, *Issue/Renew/Reevaluate/Rescind an Air Boss Letter of Authorization* (October 25, 2019), available at <<https://fsims.faa.gov/PICDetail.aspx?docId=8900.1.Vol.5.Ch9.Sec6>> [<https://perma.cc/STPG-UNSF>].