



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

SAFO

Safety Alert for Operators

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Flight Standards Service
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http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo/all_safos

A SAFO contains important safety information and may include recommended action. Besides the specific action recommended in a SAFO, an alternative action may be as effective in addressing the safety issue named in the SAFO. 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. This document is intended only to provide clarity to the public regarding existing requirements under the law or agency policies.

Subject: Mass Aircraft Demonstrations at Aviation Events.

Purpose: This SAFO serves to remind the civilian air show community of the need to ensure that appropriate well-defined procedures are established when conducting mass aircraft demonstrations at air shows.

Background: On Nov. 12, 2022, a Boeing B-17G and a Bell P-63F collided midair during the Wings Over Dallas airshow. A total of six people aboard the two airplanes were fatally injured in the crash. The two formations consisted of dissimilar aircraft operating in close proximity to one another. The National Transportation Safety Board's (NTSB) preliminary report stated there were no altitude deconflictions briefed before the flight or while the airplanes were in the air. This accident highlights the complexity of mass aircraft demonstrations, and the critical importance of safety protocols to provide separation and enhance situational awareness.

Discussion: A mass aircraft demonstration refers to multiple aircraft flying in trail or in formation within the flying display area. Mass aircraft demonstrations pose unique challenges and complexities in air show operations. These complexities and challenges include, but are not limited to, the following:

- Participation of dissimilar aircraft;
- Complex flight patterns (e.g. dog bone shaped flight paths);
- Communication protocols/management/requirements;
- Number of aircraft involved.

Therefore, the Federal Aviation Administration (FAA) recommends that the following proactive measures be taken when planning and conducting air shows. Pilots, air bosses, and event organizers should be continually assessing the risks and implementing appropriate safety mitigations to ensure the continued safety at aviation events. This continual assessment allows pilots, air bosses, and event organizers to detect emerging safety issues, assess the level of risk, and address those risks through mitigations.

Recommended Action: The FAA encourages all participants to implement the following risk mitigations while conducting mass aircraft demonstrations:

- **Participant Experience with Mass Aircraft Demonstrations.**
 - The Air Boss should be experienced and have a background in mass aircraft demonstrations.
 - Pilots should have proper training, credentialing, and recency of experience.
 - Formations should utilize experienced flight leads that have demonstrated their ability to manage their formation element.

- **Mass Aircraft Demonstration Structure.**
 - The mass aircraft demonstration structure **should include** a detailed written plan that is distributed to all pilots in a manner that is clear and concise and able to be used in the cockpit.
 - Mandatory Pre and Post flight briefings should be held to review all aspects of the normal and emergency procedures for all participants.
 - Following the briefed plan for operational execution is of critical importance. Deviations from the plan, ad hoc instructions, or maneuvers can contribute to confusion and loss of separation.
 - No simultaneous flight operations for aircraft NOT involved in mass aircraft demonstration.

- **Deconfliction Strategies.** Complete geographical, vertical, lateral, and time separation should be utilized.

- **Simplification.**
 - Mass aircraft demonstrations should use simple racetrack patterns to avoid complex maneuvering and loss of visual separation.
 - Avoidance procedures should be clear to all participants and easily executed in the event of an emergency.

For more information, reference the International Council of Air Shows (ICAS) [Multi Aircraft Operations Best Practices](#). This document provides an aid in drafting a performance plan. It provides detailed plan construction, implementation instructions and a briefing and debriefing guide.

Contact: Direct questions or comments regarding this SAFO to the General Aviation & Commercial Division at 9-AFS-800-Correspondence@faa.gov.