



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

**AUG 31 2015**

Stephen P. Creamer  
Director, Air Navigation Bureau  
ICAO Headquarters, Montreal, Canada  
International Civil Aviation Organization (ICAO)  
999 Robert-Bourassa Boulevard, Montréal, Quebec H3C 5H7, Canada

Dear Mr. Creamer:

In consideration of current/emerging unmanned free balloon (UFB) and other similar (largely uncontrolled, unmanned, limited-maneuverability) airspace system operators (to include, inter alia, sky lanterns, rockets, kites, fireworks, et al—hereafter referred to as UFB/Other), we are sending this letter to:

1. inform you of:
  - 1.1 current/emerging UFB/Other operations and US regulations and policy/directives;
  - 1.2 pertinent reported safety trends and limitations associated with data identification, collection and assessment; and
  - 1.3 mitigations we are doing/planning to address increasing trends in UFB/Other associated safety risks; as well as to
2. request ICAO support in
  - 2.1 collecting information from Air Navigation Service Providers (ANSPs) about pertinent standards and recommended practices (SARPs) as well as efforts to identify/analyze applicable safety data and mitigate associated contributing factors or safety risks; and
  - 2.2 harmonizing efforts to review and revise, as needed, existing global SARPs, inter alia, Annex 2/Appendix 5, Annex 15, and Doc 4444, to address current/emerging UFB/Other operations—which may include creation of separation standards.

### ***Current/Emerging UFB/Other Operations***

Today, some UFB/Other operations involve UFBs that:

- weigh hundreds of pounds and carry payloads weighing thousands of pounds;
- stay afloat for months at a time and operate at altitudes exceeding 100,000 feet MSL;
- are furnished with uncertified transponders, ADS-B and/or Mode S equipment;
- support 'hybrid' operations---where rockets launch from balloons at high altitudes;
- provide ground support centers with accurate time/location windows when/where the UFBs will recover and can execute limited horizontal steering by manipulating vertical ascents/descents to take best advantage of winds aloft.

Note: Recently, one operator was able to successfully maneuver their recovering UFB to keep it away from a nearby SpaceX rocket launch area.

Today, other UFB/Other operators:

- may be unaware of existing regulations/policy or associated safety risks that UFBs may pose to other airspace operators;
- do not specially equip their UFBs and have little insight about planned recovery parameters or unexpected recovery impacts;
- make little, if any, effort to coordinate with the ANSP about planned UFB activities.

New Zealand provided information/insights about varied procedures used by South Pacific ANSPs and requested ICAO assistance in developing pertinent separation standards. We would like to improve existing identification, collection, and analysis of pertinent safety data to support development of a safety case and/or associated safety risk analyses/management.

### ***US Regulations, Policy/Procedures, Limitations, and Preliminary Safety Assessment***

US Title 14 Code of Federal Regulations (CFR) Part 101, UFB rules were written over 50 years ago when UFB operations primarily involved National Weather Service (NWS) balloon launch/recovery. Current UFB operations differ significantly from those envisioned when these rules and supporting procedures, published in FAA Orders JO 7110.65, Section 9-6, and JO 7210.3, Section 18-5, were created.

These rules and policy/procedures establish limited ‘requirements’ for new and emerging UFB/other operations. While some UFB/other operators conduct extensive outreach activities and work collaboratively with FAA and other ANSPs to voluntarily implement proactive safety measures, some UFB/other operators may be unaware of general requirements or safety risks, and do not contact ANSPs to discuss or advise about their UFB/other operations.

In the US, \* *balloons* are considered *aircraft* but do not operate under general operating and flight rules for *aircraft*, are neither IFR nor VFR, and do not fall into any specific subcategory to result in specific aircraft type/classification or identification. Without a specific type designator or subcategory, safety occurrences involving UFBs/Others are difficult to identify in our data identification and collection processes. We used a ‘balloon’ word search of other safety reports to find safety occurrences involving UFBs. Additional safety occurrences involving UFBs/Others may not have been reported under mandatory air traffic control (ATC) and/or voluntary pilot/ATC safety reporting programs. Though our safety risk assessment included many assumptions; it concluded safety risk involving evasive action or aircraft/balloon collision is increasing over time. Because the 14 reported aircraft/balloon collisions did not involve serious injury or damage, preliminary safety analysis considered them to have low risk effects. We assessed the most recent safety risk as hazardous severity with medium likelihood—a large reduction in safety margin; and we realize one incident could easily reap catastrophic results (involving death or destruction), elevating this to high risk.

### ***Current/Planned Mitigations of Safety Risks Associated with UFB/Other Operations***

An Air Traffic Safety Action Program (ATSAP) briefing sheet on UFBs was published in June 2015 followed by a discussion via our Partnership for Safety Program with all ATC facility

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\* *Aircraft*—a device that is used or intended to be used for flight in the air

*Balloon*—a lighter-than-air *aircraft* that is not engine driven, and that sustains flight through the use of either gas buoyancy or an airborne heater.

local safety councils (LSCs) during June 2015. In July 2015, each facility LSC briefed their facility controllers/operational staff on this issue. This briefing focused on improved reporting of safety occurrences involving UFBs as well as ways ATC can improve internal and external sharing of pilot and other reports of UFB activities.

The Air Traffic Organization (ATO) also sponsored a two-day conference in June 2015, attended by various FAA (flight standards, aircraft certification, commercial space, et al) and other subject matter experts. Several complex issues were discussed during this conference and the group made plans to continue collaborative work toward improved processes to address emerging UFB/Other operations and mitigate safety risks.

### *Next Steps*

#### **Request the ICAO Air Navigation Bureau Secretariat:**

- Encourage ANSPs participating in the ICAO Separation and Airspace Safety Panel (SASP), other pertinent Panels, and/or Regional Planning Groups to share information about their State SARPs, safety data/assessments, best practices, or lessons learned, and other challenges related to UFB/Other operations--that may help support further safety cases, safety risk management and/or efforts to mitigate safety risks.
- Support harmonization of efforts and/or information/data sharing related to any UFB/Other work being done by States (to include work being done by New Zealand, the US, others) and any similar efforts being done by ICAO and/or other international groups—to maximize progress in various efforts to improve operations safety.

Sincerely,



Carey J. Fagan  
Executive Director, International Affairs

#### Enclosures

1. Pertinent extracts from and hyperlinks to US CFRs and FAA Orders
  - 14 CFR Part 101 to include Subpart D--Unmanned Free Balloons  
( <http://www.ecfr.gov/cgi-bin/text-idx?rgn=div5&node=14:2.0.1.3.15%23sp14.2.101.d> )
  - FAA Order JO 7110.65 Air Traffic Control, Section 9-6, Unmanned Free Balloons  
( <http://www.faa.gov/documentLibrary/media/Order/ATC.pdf> )
  - FAA Order JO 7210.3, Facility Operations and Administration, Section 18-5, Moored Balloons, Kites, Unmanned Rockets, and Unmanned Free Balloons/Objects  
( <http://www.faa.gov/documentLibrary/media/Order/FAC.pdf> )
2. Air Traffic Safety Action Program Briefing Sheet on Unmanned Free Balloons, June 2015  
( [https://my.faa.gov/org/linebusiness/ato/safety/atsap/atsap\\_briefing\\_sheets.html](https://my.faa.gov/org/linebusiness/ato/safety/atsap/atsap_briefing_sheets.html) )
3. Report of FAA-Sponsored Meeting on UFB/Other Operations