



WORKING PAPER

TWELFTH AIR NAVIGATION CONFERENCE

Montréal, November 19-30, 2012

- Agenda Item 4: Optimum capacity and efficiency – through global collaborative ATM**
4.1: Efficient management of airspace and improved flow performance through collaborative-decision making (CDM)

**UNITED STATES CONSIDERATIONS FOR THE ASBU MODULES
RELATED TO AIRBORNE SEPARATION**

(Presented by the United States)

EXECUTIVE SUMMARY

This paper presents the United States recommendations for implementation of the aviation system block upgrades (ABSUs) related to airborne separation.

The ASBU framework includes modules over a series of blocks, supported by technology roadmaps, which serve to progressively enhance many aspects of civil aviation operations. This paper discusses U.S. perspectives on Modules B2-85 (Airborne Separation) and B3-85 (Airborne Self-Separation).

Action: The Conference is invited to agree to the recommendations in paragraph 3.

References:

Doc 9854, *Global Air Traffic Management Operational Concept*

Doc 9750, *Global Air Navigation Plan*

AN-Conf/12-WP/3 & 11

Report of the ADS-B-In Aviation Rulemaking Committee:

http://www.faa.gov/nextgen/implementation/portfolio/trans_support_progs/adsb/media/ADSB%20In%20ARC%20Report%20with%20transmittal%20letter.pdf

1. BACKGROUND

1.1 In AN-Conf/12-WP/11 ICAO proposes modules related to airborne separation. Modules B2-85, Airborne Separation (ASEP) and B3-85, Airborne Self-Separation (SSEP), describe development of future airborne separation capabilities.

1.2 This paper describes U.S. concerns related to Modules B2-85 and B3-85 and provides suggestions for addressing them.

2. DISCUSSION

2.1 AN-Conf/12-WP/11 contains two references to “cooperative separation” but this term is not defined. Defining this term, and related terms addressing changes in separation responsibility, is critical towards creating an effective strategy for moving forward in air traffic management concepts.

2.2 The aviation system block upgrade (ASBU) modules described in AN-Conf/12-WP/11 Appendices E and F, Modules B2-85, Airborne Separation (ASEP) and B3-85, Airborne Self-Separation (SSEP)), contain numerous references to “delegation of responsibility to the flight deck for separation provision” or “delegated separation” and related statements which include, “relieve the controller from the responsibility for separation between these aircraft”. From a U.S. perspective, the term “delegated separation” is used in the NextGen Concept of Operations to describe operations using ADS-B-In capabilities in non-visual conditions that are analogous to visual separation operations.

2.3 In July 2010, the FAA chartered the ADS-B-In Aviation Rulemaking Committee (ARC) to provide a forum for the “aviation community to define a strategy for incorporating ADS-B-In technologies” in airspace operations. The ARC formed a working group led by pilots and controllers to work on the topic of “delegated separation”, this work led to multiple recommendations by the ARC. The ARC issued its report in September 2011 (see references in executive summary).

2.4 Based on the work of the ADS-B-In ARC, a key issue with the term “delegated separation” is that it is generally unclear to pilots and controllers what is being “delegated” and what responsibilities each party has during such operations. The ARC supported the concept of a controller being able to apply different, risk-based separation minima for properly-equipped ADS-B-In aircraft with appropriately trained flight crews.

2.5 Therefore, per the recommendations of the ADS-B-In ARC, the U.S. is trying to move away from terminology described in paragraph 2.2 of this paper and the concepts that they imply. The U.S. position is that a distinction should be made between general obligations of the controller to prevent aircraft collisions in their airspace and the requirement for the controller to ensure that two aircraft are no closer than a given separation minimum.

2.6 The U.S. is also concerned that ASBU Module B2-85 does not adequately acknowledge the linkages between this ASBU module and the airborne collision avoidance system (ACAS) ASBU Module B2-101. Based on studies performed by the U.S., to date, several “airborne separation” applications will require changes to ACAS to be operationally effective, and these changes are too substantial to be accommodated by the present ACAS algorithms. Therefore, the U.S. position is that ACAS ASBU module B2-101 (ACAS-X) is probably a requirement for several envisioned “airborne separation” applications, and that this relationship should be described explicitly in both the ACAS and airborne separation ASBU “threads.”

2.7 As a related issue, the U.S. does not agree that “airborne self-separation” should be a strategic direction for ICAO at this time. The U.S. position is that “self-separation” is an especially advanced type of “airborne separation” and this capability should not be pursued by ICAO until after “airborne separation” is better understood. Even then, the cost of the expected aircraft avionics should be considered in comparison to the expected benefits before any ICAO work begins.

3. **RECOMMENDATIONS**

3.1 The Conference is invited to agree on the following recommendations:

- a) adopt “airborne separation” concepts involving controllers assigning tasks to flight crews, with controllers able to apply different, risk-based separation minima for properly equipped ADS-B-In aircraft;
- b) acknowledge the relationship between airborne separation and ACAS;
- c) modify ASBU Module B2-85 to reflect a) and b), modify ASBU Module B2-101 to reflect b); and
- d) only adopt “airborne separation” as a strategic direction for ICAO at this time.

— END —