



*International Civil Aviation Organization*

**THE TENTH MEETING OF AUTOMATIC  
DEPENDENT SURVEILLANCE –  
BROADCAST (ADS-B) STUDY AND  
IMPLEMENTATION TASK FORCE  
(ADS-B SITF/10)**



Singapore, 26 -29 April 2011

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**Agenda Item 3:           Review progress made by ADS-B related ICAO panels**

**UPDATES OF ADS-B RELATED DEVELOPMENT BY ICAO PANELS**

(Presented by the Secretariat)

**SUMMARY**

This paper provides information on the ADS-B related development by related ICAO Panels.

Action by ADS-B SITF/10 is at Paragraph 3.

**1.       INTRODUCTION**

1.1           Several ICAO Panels are involved in developing and guidance materials including Aeronautical Surveillance Panel (ASP) and Separation and Air Space Safety Panel (SASP).

**2.       DISCUSSION**

**An Update on the Aeronautical Surveillance Panel (ASP)**

2.1           The ninth ASP WG meeting, hosted by Eurocontrol was held in Brussels, Belgium from 4 to 8 October 2010. The tenth meeting of ASP WG meeting was held in Toulouse, France from 11 to 15 April 2011. The main purpose of the meeting was to prepare for the second meeting of the Working Group of the Whole (WGW/2) which is planned to be held at the ICAO HQ in September 2011.

2.2           It was decided that the ASP WGW/2 should be held from 29 to 30 September 2011 (after the Eleventh WG meeting to be held from 26 to 28 September) with only two agenda items:

- I. Proposed amendments to existing provisions on surveillance and collision avoidance systems in light of operational experience; and
- II. Future work

2.3 The main topic under I would be proposed amendments to Annex 10 Vol. IV introducing a new version of extended squitter messages (Version 2 equal to RTCA DO 260 B) and a edition of *Manual on Technical Provisions for Mode S Services and Extended Squitter* (Doc 9871) that contains all message formats and requirements of the new version.

2.4 Compared to earlier versions, Version 2 redefines the ADS-B integrity by treating source of the data and the system separately and in this respect, defines the necessary parameters. It also includes the transmission of selected altitude, selected heading and barometric pressure setting of the aircraft. Version 2 messages also provide for the transmission of Mode A codes and the presence of the ACAS resolution advisory (RA) in the flight deck.

2.5 There won't be any guidance material for the flight testing of ADS-B and MLAT at the subject meeting as the work has not sufficiently matured and moreover, there is no urgency for such material as major ADS-B implementations which can provide the basis for the development of the material are years away.

2.6 Under II, the meeting will propose a new work programme which includes, inter alia, the development of low-power and low-cost ADS-B OUT/IN units for airport surface vehicles and light aviation (e.g. gliders). The former is deemed to prevent runway incursions and the latter will improve the general situational awareness in uncontrolled airspace. The proposed new work programme also includes the development of multistatic radar which uses the emissions of other radio transmitters (e.g. broadcasting stations) to get a fix on the aircraft. Obviously this would be to enable the implementation of aeronautical surveillance systems at much lower costs.

2.7 The foreseen completion dates for new work items is the end of 2015. The report of the ASP WG/2 is to be reviewed by the Air Navigation Commission in late 2011.

#### **Airborne Surveillance Task Force (ASTAF)**

2.8 The newly established Airborne Surveillance Task Force (ASTAF) had its first meeting in Montreal from 26 to 28 May 2010 mainly to organize itself for carrying out the work. The 3<sup>rd</sup> meeting of the Task Force was held in Toulouse, France from 21 to 23 February 2011. ASTAF is currently developing the first draft of the *Manual on Airborne Surveillance*. The new manual which will be completed in early 2011 will have guidance material on the following applications that are enabled by ADS-B IN functionality:

- 1) ITP – In-trail procedures
- 2) VSA – Enhanced Visual Separation on Approach
- 3) AIRB – Enhanced Traffic Situational Awareness during Flight Operations
- 4) SURF – Enhanced Traffic Situational Awareness on the Airport Surface
- 5) ASPA-FIM – Airborne Spacing – Flight Interval Management

### **Separation and Airspace Safety Panel (SASP)**

2.9 On the operational side, the eighteenth meeting of the Working Group of the Whole of the Separation and Airspace Safety Panel (SASP) was held at Eurocontrol Headquarters in Brussels, Belgium from 8 to 19 November, 2010.

2.10 The work of SASP has been progressed by several project teams including Project Team 13 dealing with ADS-B and MLAT. The main progress made is highlighted as follows:

2.10.1 Advances in surveillance technology for aircraft separation have spurred a corresponding need for guidance material in support of these advances. Procedures governing the use of automatic dependent surveillance — broadcast (ADS-B) as an alternative or supplement to radar was introduced into the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444) in 2007. Those procedures provided for the use of a 9.3 km (5.0 NM) separation minimum between aircraft equipped with ADS-B transmitters. Subsequent growth in the use of multilateration (MLAT) systems for surveillance created a demand for the development of guidance material in support of this technology as well.

2.10.2 As a result, the Separation and Airspace Safety Panel (SASP) built upon the 9.3 km (5.0 NM) safety assessment to include both ADS-B and MLAT systems and to compare them to reference radar units used in providing a 5.6 km (3.0 NM) separation minimum. The work consisted in selecting a reference radar currently used to provide 5.6 km (3.0 NM) separation minima and comparing its performance to those of specific ADS-B and MLAT systems. This work was initially presented to the Air Navigation Commission in March 2011. The proposal for amendments to PANS-ATM (Doc4444) relating to use of ADS-B and/or MLAT for provision of 3 NM separation is currently sent out to States and International organizations for comments. Barring any unforeseen circumstances, it is foreseen for applicability in November, 2012.

2.10.3 Another point of discussion concerned is the removal of the ADS-B Circular 311 from the web site as some States had expressed concerns at this given that they reference this document in safety assessments. The Secretary informed the meeting that it was taken down due to a number of copyright issues associated with some of the supporting material referenced in the Circular. It was stated that States could obtain a copy from the ANB as required however it might not be the whole document as the copyright material may need to be deleted. *Guidance material pertaining to use of ADS-B and multilateration (MLAT) systems and their system performance is contained in the*

Assessment of Automatic Dependent Surveillance – Broadcast (ADS-B) and Multilateration Surveillance to Support Air Traffic Services and Guidelines for Implementation (*Cir 326*) which is under final editorial.

2.10.4 Project Team 2 of SASP had considered work in relation to additional material provided by the Asia/Pacific RASMAG for the revised “RVSM Manual” Doc 9574, progressed work in relation to the development of a standard for RVSM formation flights and use of ADS-B for RVSM height-keeping performance monitoring. The meeting also noted the significant progress made by Australia and the United States in relation to the use of ADS-B for RVSM height monitoring and encouraged them to finalize this work at the earliest opportunity.

2.10.5 SASP and Operational Data Link Panel (OPLINKP) will be further developing provisions (SARPs, Procedures for Air Navigation Services (PANS) and/or guidance material) in the 2012/2013 timeframe on the following subjects:

- a) a new automatic dependent surveillance — contract (ADS-C) application as part of a package to support 4D- Trajectory Management (4D-TRAD);
- b) surveillance capability extended to wide area multilateration systems; and
- c) in-trail cline using ADS-B and controller-pilot data link communications (CPDLC).

### **3. ACTION REQUIRED BY THE MEETING**

3.1 The meeting is invited to note the updates of the related panels on ADS-B and Multilateration.

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