

ELEVENTH AIR NAVIGATION CONFERENCE

Montreal, 22 September to 3 October 2003

- Agenda Item 1: Introduction and assessment of a global air traffic management (ATM) operational concept**
1.2: Enabling concepts in support of the global ATM operational concept

AUTOMATIC DEPENDENT SURVEILLANCE — BROADCAST CONCEPT OF USE

(Presented by the Secretariat)

SUMMARY

This paper presents the progress of the Operational Data Link Panel (OPLINKP) in the development of an automatic dependent surveillance — broadcast (ADS-B) concept of use. The culmination of this work is contained in the Appendix. The Air Navigation Commission agreed that the concept of use should be presented to the Conference.

Action by the Conference is in paragraph 3.

1. INTRODUCTION

1.1 The fifth meeting of the Automatic Dependent Surveillance Panel (ADSP/5, October 1999) reported to the Air Navigation Commission on the progress of States and provided information on the potential for automatic dependent surveillance — broadcast (ADS-B) to satisfy identified requirements, as well as a detailed breakdown of the outstanding issues before such an application could be implemented. The Commission amended the panel's work programme to include the development of operational requirements for the use of a system to increase traffic situational awareness, the development of a concept of use and operational requirements for the application of ADS-B, and a monitoring role in the development of the use of systems providing airborne separation assurance in order to develop a concept of use. The first step in this work programme therefore involved the development of an ADS-B concept of use.

2. DISCUSSION

2.1 An ADS-B concept of use, defined as a detailed description of how a particular functionality or technology could be used, was completed during the first quarter of 2003 by the Operational Data Link Panel (OPLINKP, formerly the ADS Panel), and is contained in the Appendix to this paper.

2.2 Significant effort had been made to incorporate different views on the part ADS-B would play in terms of surveillance in the air and on the ground in the short to medium term. Certainly, the fact that the concept of use concentrated on the short to medium term uses of ADS-B and that it did not limit what ADS-B could be used for in the longer term, went some way towards finding common ground.

2.3 ADS-B was seen by OPLINKP as a potential key data link application in a future ATM environment, providing new surveillance capabilities to both aircrew and air traffic services. It was also seen as a potential *enabler* to satisfy identified operational requirements. The aviation community was investigating this technology with a view to providing a cost-effective replacement of current systems and technology. Whilst it was recognized that any new system would need to meet the demands of maintaining or improving the present safety level, a large number of issues associated with ADS-B still required further investigation. Several large-scale projects which had ADS-B as a core application, were expected to report on these issues in the coming years. It was noted that significant coordination and cooperation between States, international organizations and industry was a central feature in the work of these projects.

2.4 ADS-B is seen in many quarters as a potential application to address the need for increased airborne traffic situational awareness and to provide for airborne separation assurance. However, it has also been recognized that, within the wider context of its potential, including a new sharing of responsibilities between the flight crew and controller, the application of ADS-B-related procedures was indeed complex. Importance would need to be placed on gaining acceptance from pilots, controllers and the aviation community in general, before moving to any new concept of the provision of air traffic services.

2.5 It is also important to point out that the material should not be viewed as a final position of the panel, particularly recognizing that consensus still needs to be reached on a variety of issues associated with the application of ADS-B services. Rather, the concept of use provides a compendium of matters that are being considered and reflected upon, to a large extent within the aviation community. To this end, the OPLINKP was hopeful that the Conference would find the information of value, particularly from the perspective of consideration of future activities within ICAO. OPLINKP understood well that considerable work still remained, to further enhance the level of detail contained in the document. The potential for increased traffic situational awareness and airborne separation assistance, in light of emerging surveillance systems and their effect on air traffic services would need to be investigated further; however, the panel agreed that work also needed to concentrate on operational requirements and airborne and ground systems capability determination. Furthermore, Standards and Recommended Practices (SARPs), procedures and guidance material pertaining to ADS-B needed to be developed.

2.6 In addition to the above, it should be noted that, as the ATM operational concept (AN-Conf/11-WP/4 refers) matures in follow-up to the Conference, it is likely that work would ensue on developing a set of ATM requirements which would define the future ATM system and guide work toward development of such a system. As experience and knowledge with ADS-B is gained and work on ATM requirements matures, the role of ADS-B as an important data link application and concept element in the future system will become clearer. The results and recommendations of the Conference should guide further development of ATM requirements based on the operational concept and operational requirements for ADS-B.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to review and assess the ADS-B concept of use at the Appendix and make recommendations to ICAO for further work.

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