

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

AIRBORNE SEPARATION ASSISTANCE SYSTEM (ASAS)

(Presented by the Secretariat)

SUMMARY

The airborne separation assistance system (ASAS) has been developed to provide an airborne surveillance function, and support the application of automatic dependent surveillance — broadcast (ADS-B). This paper discusses the development of ASAS.

Action by the conference is in paragraph 4.

1. INTRODUCTION

1.1 The airborne separation assistance system (ASAS) may support a part of the Conflict Management and Traffic Synchronization functions of the air traffic management (ATM) operation concept (AN-Conf/11-WP/4 refers). ASAS is intended to be a flight deck system to assist in the provision of separation from other traffic.

1.2 Information paper AN-Conf/11-IP/5 contains the draft ASAS Circular as developed by the Surveillance and Conflict Resolution Systems Panel (SCRSP) in accordance with a task assigned to it by the Air Navigation Commission to develop and review proposals for operational and technical procedures for the use of ASAS.

2. DESCRIPTION OF ASAS

2.1 ASAS has been defined by SCRSP as: An aircraft system based on airborne surveillance that provides assistance to the flight crew supporting the separation of their aircraft from other aircraft.

2.2 An ASAS application has been defined by SCRSP as: A set of operational procedures for controllers and flight crews that makes use of an airborne separation assistance system to meet a defined operational goal.

2.3 The range of ASAS applications that have been envisaged encompass those seeking to increase flight crews' situational awareness related to traffic, and those assisting the flight crew in maintaining separation from other aircraft.

2.4 ASAS applications will require a surveillance capability, based largely on ADS-B and traffic information service — broadcast (TIS-B).

2.5 Four categories of candidate ASAS applications have been identified by the SCRSP as follows: a) traffic situational awareness applications; b) airborne spacing applications; c) airborne separation applications; and d) airborne self-separation applications.

2.6 An ASAS will interact with a specific on-board surveillance data transmission and reception function, a communication system, and flight data system. A typical ASAS configuration for commercial transport aircraft would include a surveillance data and separation assurance processing system, cockpit display of traffic information (CDTI), alerting system, and a control panel. The processing function would form tracks for other aircraft, present the tracks to a cockpit display and make any calculations required for particular applications. The CDTI would be the interface between the data processing and the flight crew.

3. ASAS ACTIVITIES

3.1 There has been considerable interest in ASAS, including operational trials, since the mid-1990s in the United States and in Europe. To increase the potential for an early implementation, particular attention is currently being given by several States to airborne traffic situational awareness applications and airborne spacing applications.

3.2 The Federal Aviation Administration (FAA) of the United States has initiated a programme now known as SafeFlight 21 (SF21) utilizing ADS-B, CDTI and TIS-B as enabling technologies to provide airborne and surface traffic situational awareness, as well as airborne spacing. The operational trials and evaluations for ASAS applications in SF21 are conducted primarily in the Ohio River Valley of the United States and focuses on commercial air carriers in a busy hub environment and also in Alaska focussing on smaller classes of aircraft.

3.3 National Aeronautics and Space Administration (NASA) of the United States is conducting ASAS research and development through the distributed air-ground traffic management (DAG-TM) concept. This focuses on trajectory negotiation, airborne spacing and airborne self-separation. Earlier work addressed closely-spaced parallel approaches which is an airborne separation application.

3.4 There have been many projects to promote the efficiency of air transport operations, based on the use of ADS-B and ASAS in Europe. These have been promoted by the European Commission (EC), EUROCONTROL and several States. These include: the North European ADS-Broadcast Network (NEAN) Update Programme (NUP); the Mediterranean Free Flight (MFF) project; the More Autonomous Aircraft in Future ATM System (MA-AFAS) project; and the Gate-to-Gate (G2G) project.

4. ACTION BY THE CONFERENCE

4.1 The Conference is invited to note that ASAS may potentially support parts of the ATM operational concept.

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