



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

**Agenda Item 6: Review States' activities and interregional issues on trials and
implementation of ADS-B and Multilateration**

**HARMONISATION OF AIR TRAFFIC CONTROL PROCEDURES FOR ADS-B
OPERATIONS IN THE SOUTH CHINA SEA AREA**

(Presented by Singapore)

SUMMARY

The implementation of ADS-B over the South China Sea will bring about enhancement to safety and operational efficiency for flights operating in the South China Sea area.

This paper proposes to discuss the harmonization of ATC procedures for ADS-B operations during the operational trials and implementation on ATS routes L642 and M771 in order to reap the full benefits that come with the deployment of ADS-B.

Action by the meeting is at Paragraph 3.

1. INTRODUCTION

1.1 Two routes over the South China Sea have been previously identified to potentially reap the full benefit of ADS-B implementation due to the high air traffic volume plying on these routes. ATS routes L642 and M771 are two of the busier routes over the South China Sea area that serves flights operating between the airports in the South East Asia region and the Pearl River Delta area and beyond.

1.2 At the 8th ADS-B SITF Meeting (ADS-B SITF/8) in May 2009 in Hanoi, CANSO presented the cost benefit analysis study which showed potential fuel savings of 1.2 million kilograms and reduction of carbon emission by 4 million kilograms a year through the reduction of flight delay and allocation of optimum flight levels.

1.3 At the 6th South East Asia ADS-B Working Group (SEA ADS-B WG/6) in February 2011 in Singapore, Hong Kong, China highlighted the need to strengthen collaboration and to harmonise the implementation of seamless surveillance coverage on ATS routes L642 and M771.

1.4 Following this, at the sidelines of the SEA ADS-B WG/6 Meeting, the four States (China, Hong Kong, China, Singapore and Viet Nam) in which the two routes traverse, discussed on the need to harmonise details to achieve the seamless surveillance coverage on these two routes. The discussions included harmonisation of flight level band and longitudinal spacing. The SEA ADS-B WG/6 Meeting noted that further discussions need to take place at the ADS-B SITF/10 meeting to harmonise the procedures and concept of operations.

2. DISCUSSION

2.1 With the introduction of a major air traffic management initiative, an operational trial would be carried out to ensure that both the air traffic controllers and pilots would be familiar with the new operating procedures. Such an operational trial will also ensure that any difficulties encountered during the trials will be appropriately addressed to ensure that safety will not be compromised and the operational efficiency will not be significantly affected.

2.2 In this respect, Singapore proposes a phased approach to achieving seamless surveillance coverage on L642 and M771 through the deployment of ADS-B. In Phase I of the operational trials, ADS-B surveillance separation would be applied to suitably ADS-B equipped aircraft at or above FL350 on opportunity basis. This trial period would run for one year which will provide ample time for operators to progressively upgrade their on-board equipage to reap the benefits of ADS-B surveillance.

2.3 In Phase II of the operational trial, suitably ADS-B equipped aircraft operating on L642 and M771 will be provided with priority on the assignment of FL350 and/or above to achieve their optimum level. This phase would also run for one year period before the full implementation of an exclusive ADS-B airspace at or above FL290 on these two routes. The timeline for the various phases can be found in **Annex A**.

2.4 To allow more ADS-B equipped aircraft to attain their optimum level, there will be a need to harmonise the longitudinal spacing for flights on these routes. The current longitudinal spacing on L642 and M771 varies according to the services that are provided in the respective Flight Information Regions. While the minimum separation stipulated by ICAO for ADS-B surveillance services is 5NM, it may not be operationally viable to provide flights with the minimum longitudinal spacing throughout the entire cruising segment of the flight on these routes.

2.5 Current air traffic management initiatives utilising Performance Based Navigation (PBN) specifications allows reduction of longitudinal separation minima from the conventional 10 minutes or 80 NM to 50 NM based on RNP10 PBN specification and 30NM based on RNP4 PBN specification. As such, to quantify the benefits of implementing ADS-B, the longitudinal spacing on these two routes should be significantly less than 30 NM.

2.6 The reduction of the longitudinal spacing would enable more ADS-B equipped flights to operate at their optimum flight level. This will also help reduce the ground delays at the respective airports, reduce operating costs and carbon emissions.

3. ACTION REQUIRED BY THE MEETING

3.1 The meeting is invited to note the following which can be discussed at the upcoming South East Asia ATM Coordination Group meeting in May 2011;

- (a) phased approach to implementing ADS-B operations on ATS Route L642 and M771;
- (b) the proposed height band of FL350 and above for the application of ADS-B separation on opportunity basis for Phase I and on priority basis for Phase II of the operational trial; and
- (c) the proposed reduction in longitudinal spacing between suitably ADS-B aircraft to quantify the benefits of implementing ADS-B.

ADS-B Operational Trial and Implementation in Singapore FIR

