



International Civil Aviation Organization

**Automatic Dependent Surveillance – Broadcast (ADS-B)
Study and Implementation Task Force**

Brisbane, Australia, 24-26 March 2003

Agenda Item 3: Evaluate information available on the selection of link technology as the preferred technology for Asia/Pacific Region.

**PROPOSED NEAR TERM CRITERIA FOR
LINK TECHNOLOGY CHOICE**

SUMMARY

This paper proposes a number criteria against which States in the Asia and Pacific Regions could select the ADS-B data link for the near term.

(Presented by Australia)

1. Introduction

1.1 A number of criteria are proposed for the choice of a near term data link to support ADS-B.

2. Asia Pacific Requirements

2.1 Asia Pacific requirements differ somewhat to the requirements in Europe and USA. In Asia/Pacific there is greater benefit for ADS-B to be used as an alternate surveillance tool, whereas in Europe/USA radars are commonplace. Much of Asia/Pacific does not have complete ATC surveillance radar coverage. The urgency for ADS-B deployment is therefore more obvious in Asia Pacific with a focus on the provision of basic surveillance.

2.2 In addition, as a result of the reduced number of radars, Asia/Pacific does not have as large a problem with radio frequency pollution in the aeronautical bands. Eg Mode S 1090 MHz is significantly reduced compared to Europe/USA. Furthermore, the Asia Pacific region does not need to support the large numbers of GA aircraft that are supported by the USA environment.

2.3 Asia Pacific also differs in that traffic density is not predicted to be equivalent of Europe/USA in the short term, although growth rates may be higher.

Short Term requirements

2.4 It is assumed that the next 10 years constitutes the near term. During the next 10 years, considerable work is expected to define the operational use of ADS-B. Initial deployment of ADS-B is envisaged as a pre-requisite before the advantages of ADS-B can be achieved. Traffic densities within the next 10 years in Asia will remain in almost all locations, significantly less than those experienced in Europe/USA.

3. Proposed criteria

3.1 The following criteria are proposed for inclusion along with any other relevant criteria determined by the meeting:

	Criteria	
1	Availability of avionics standards	Avionics standards from ICAO, RTCA , AEEC & Eurocae are important practical requirements for easy deployment of avionics in commercial air transport aircraft.
2	Availability of avionics products from multiple vendors.	Avionics take considerable time to develop, certify and deploy. Environmental testing and associated physical compliance is non trivial. Competition between avionics vendors will make avionics available at a reasonable price.
3	Ease of fitment to commercial air transport aircraft including avoidance of interference to other services.	Antenna requirements and ability to conform to "Form & Fit" standards is required. New avionics must not interfere with existing or planned systems.
4	Knowledge of the technology allowing performance to be baselined and and repair services provided	Avionics faults need to be able to be identified and repairs triggered. Knowledge of the technology is required "at the ramp" , in the repair shops as well at manufacturers premises.
5	Data link bandwidth	It is important that the data link bandwidth is adequate to support the services without degradation of existing services.
6	Price	Expected price of avionics is an important factor.
7	Available for all aviation segments	Avionics are required for Air Transport aircraft, Regional aircraft and General aviation aircraft.
8	Willingness to fit	Major aircraft manufacturers must be willing to fit the avionics and provide service bulletins before many Airlines will be willing to systematically fit avionics.
9	Acceptance for aviation community & organisations	The concerns of major aviation authorities both locally and in other parts of the world are of concern. Fitment decisions by other agencies and regions are critical because international aircraft traverse multiple regions. Air transport is global.
10	Frequency spectrum availability	Frequency spectrum is important. Without the ability to provide a guaranteed frequency allocation, it is unlikely deployment can be achieved within the near term horizon.
11	Air-Ground range performance	Adequate link margin performance is required to maximise the effective range of any ADS-B ground station.

3.2 The ability to support high traffic densities has not been included because in Asia Pacific this circumstance is not expected in the near term. European and USA studies have focussed on high density airspace, in locations where there is a high density of radars. These studies are not very relevant to Asia Pacific in the short term horizon.

4. Recommendation

4.1 The meeting is invited to accept the above list of criteria as a basis upon which to choose the ADS-B interoperable link technology for use in APANPIRG states.

Contact: Greg Dunstone
Senior Engineering Specialist, Airservices Australia
Email: greg.dunstone@airservicesaustralia.com