



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.

ADS-B TECHNICAL STANDARDS ORGANISATIONS

SUMMARY

This paper summarises the organisations involved determination of ADS-B standards.

(Presented by Australia)

1. Introduction

1.1 There is considerable confusion in the world regarding avionics standardization. The following outlines briefly the standards organizations involved in ADS-B and their respective roles.

2. ICAO

2.1 ICAO standards (SARPS) as defined in Annex 10 define the required signals in space. E.g. Annex 10 Amendment 77 defines the standards for ADS-B squitter DF17 and DF18 messages.

3. RTCA

3.1 RTCA is an association of aeronautical organizations of the United States from both government and Industry. It publishes standards for the aeronautical industry which define the functionality and testing of avionics. The standards include

MASPS : Minimum Aviation System Performance Standards

MOPS : Minimum Operational Performance Standards

MASPS are more general and generic than MOPS. In the case of ADS-B, the DO-242

Recently the RTCA Plenary has approved a refinement of the standard to DO260A

MASPS for ADS-B do not address the choice of link technology.

3.2 RTCA has published standards for ADS-B including the following:

- ADS-B MASPS DO242 & DO242A
- ADS-B MOPS 1090 MHz DO260 & DO260A
- Mode S MOPS DO-181c which includes ADS-B DF17 message
- UAT MOPS: DO-282

4. AEEC

4.1 The Airlines Electronic Engineering Committee (AEEC) is an international body of airline representatives that leads the development of technical standards for airborne electronic equipment-including avionics and in-flight entertainment equipment-used in commercial, military, and business aviation. The committee produces “ARINC standards”.

4.2 The main focus of the ARINC standards is to achieve “form fit” equivalence so that avionics boxes made by different manufacturers can be interchanged between airframes and aircraft types.

4.3 ARINC Standards deliver substantial benefits to airlines by promoting competition, providing interchangeability, and standardizing maintenance procedures. Furthermore, for new avionics and aircraft installations, ARINC Standards provide the starting point for avionics development and allow aircraft manufacturers to pre-wire aircraft, thus ensuring that cost-effective avionics and new installation are compatibles.

4.4 Regarding ADS-B, ARINC standard 718A – defines the ADS-B out capability.

5. FAA

5.1 The FAA Publisher Technical Service Orders which define the standards for avionics acceptable to the US Government. In the context of ADS-B, the FAA has not published a TSO at this time. However, the FAA TSO C112 for the ModeS transponder requires compliance with RTCA DO-181. Some argue that compliance with DO-181c, which includes Mode S ADS-B capability, is therefore allowed.

6. EUROCAE

6.1 The European Organisation for Civil Aviation Equipment (EUROCAE) is the organisation that publishes technical standards for avionics, including both functionality, testing and form fit standards. Today, EUROCAE document are considered by Joint Aviation Authorities to be referenced by the JAA Joint Technical Standard Orders and other regulatory documents. The main European administrations and the main aircraft and equipment manufacturers are members of EUROCAE and actively participate in the Working Groups which prepare these specification documents.

6.2 Regarding ADS-B Eurocae has published the following :

- a. ED73A Mode S MOPS including ADS-B extended squitter messages
- b. ED102 ADS-B for 1090Mhz
- c. ED-108: Interim MOPS for VDL Mode 4 Aircraft Transceiver for ADS-B
- d. ED86 for transponder Form Fit

7. JAA

7.1 The Joint Aviation Authorities (JAA) is an associated body of the European Civil Aviation Conference (ECAC) representing the civil aviation regulatory authorities of a number of European States who have agreed to co-operate in developing and implementing common safety regulatory standards and procedures. This co-operation is intended to provide high and consistent standards of safety and a "level playing-field" for competition in Europe. Much emphasis is also placed on harmonising the JAA regulations with those of the USA. The JAA publishes Technical service orders similar to the FAA.

7.2 Regarding ADS-B, the JAA has published JAA TSO 2C112a for mode S transponders which references ED73A which in turn includes the ADS-B extended squitter messages.

8. Other State Regulatory Authorities

8.1 State regulators also issue authority to fit avionics, often referring to existing FAA or JAA TSOs. Sometimes, individual states issue their own TSO documents

9. Recommendation

9.1 The meeting is invited to note the role of various international and nation bodies in the determination of ADS-B technical standards

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