



International Civil Aviation Organization

**The Third Meeting of Automatic Dependent Surveillance – Broadcast (ADS-B)
Study and Implementation Task Force (ADS-B TF/3)**

Bangkok, 23-25 March 2005

Agenda Item 5: Review result of ADS-B Working Group Meeting

ENTRY OF FLIGHT ID (UPDATE)

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(Presented by Greg Dunstone, Airservices Australia)

SUMMARY

Entry of Flight Identity

1 Background

1.1 The experience in Australia is that aircraft flight crews continue to enter incorrect Flight Identity. This issue was reported at the Singapore Task Force meeting.

1.2 At that meeting, Australia undertook to contact Eurocontrol to find out the approach taken by Europe to avoid this problem during the deployment of Elementary surveillance in Europe. This paper includes a response from Europe.

2 Australian experience

2.1 Monitoring of ADS-B reports from aircraft has continued during the last year.

2.2 Due to numerous errors in Flight ID, email letters have been sent to the Flight Operations staff of the concerned airlines in the form shown below following each error or collection of errors.

2.3 As a consequence, the rate of Flt ID entry errors has diminished markedly. Incorrect FLT IDs are relatively rare now except for one airline. Additional coordination will take place with that domestic airline.

“As part of the pilot information program leading up to the introduction of Automatic Dependent Surveillance Broadcast (ADS-B) services in the second half of 2005, the Australian ATM Strategic Planning Group, which includes representatives from your airline, has asked Airservices Australia to send notes to aircraft operators identifying flights where the broadcast flight identification did not match the aircraft identification on the ATS FPL.

When ADS-B services are introduced nationally later this year, the aircraft flight ID/flight number entered by the flight crew needs to match the FPL aircraft identification (Item 7) in the ATS flight plan in order to correlate the ADS-B position information with the appropriate flight plan data in the ATC system.

Entry of the "correct" flight identification is a global issue and applies to most ATC systems around the world that process Mode S identification for ADS-B and enhanced surveillance applications.

The following was noted on <date> :

<Callsign>/<registration> departed <ADEP> at <time> for <ADES>.

Flight identification was set as: " _____ "

The flight identification/flight number entered by the flight crew should match the aircraft identification in the ATS flight plan. In this case: < FPL aircraft identification>"

3 Eurocontrol Specimen AIC

3.1 Eurocontrol has issued a Specimen AIC on the topic of "ICAO 24-Bit Aircraft Addresses And Aircraft Identification Reporting"

4 UK Civil Aviation Authority Communication

4.1 The UK CAA has issued the attached information sheet on the topic of entry of Flight ID

5 Conclusion

5.1 The meeting is invited to note the ongoing work necessary to ensure correct entry of flight identification. Correct entry is needed for both ADS-B as well as Mode S elementary and enhanced surveillance.

Specimen Aeronautical Information Circular (AIC)

Recommended Text of State AIC



Notes	ICAO 24-Bit Aircraft Addresses and Aircraft Identification Reporting
1. State to insert date and reference of last circular issued for Mode S Elementary Surveillance, if applicable.	1 INTRODUCTION 1.1 The provision of air traffic services (ATS) using SSR Mode S, initially in a central area of European airspace, will rely on a unique ICAO 24-bit aircraft address for selective interrogation of individual aircraft. The 24-bit aircraft address is also an essential element of the airborne collision and avoidance system, ACAS II. In addition, Mode S surveillance requires the reporting of aircraft identification as stated in previous circulars concerning Mode S airborne equipment requirements. (note 1). 1.2 The aircraft address shall be one of 16 777 214 twenty-four-bit aircraft addresses allocated by ICAO to the State of Registry or common mark registering authority and assigned as prescribed in the Appendix to Chapter 9, Part I, Volume III, ICAO Annex 10. 1.3 All Mode S equipped aircraft engaged in international civil aviation are required to have an aircraft identification feature as prescribed in ICAO Annex 10, Volume IV, Chapter 2, 2.1.5.2. 1.4 This circular provides guidance to ensure consistency regarding 24-bit aircraft addresses and the reporting of aircraft identification relevant to the operational introduction of Mode S Elementary and Enhanced Surveillance. In particular: a) Adherence to the world-wide scheme for assignment of ICAO 24-bit Aircraft Addresses. b) Correct setting of Aircraft Identification by flight crew.
2. Insert name of State and title of applicable organisation responsible for 24-bit aircraft address assignment	2 THE ICAO 24-BIT AIRCRAFT ADDRESS 2.1 Instances occur of incorrect 24-bit aircraft addresses being installed/hard-wired on individual aircraft. This has happened not only on first installation of a Mode S transponder but also when a major modification has been made to the Mode S equipment, and following a change of State of Registration. Incorrect installation, such as setting the address to all zeros, or, inadvertent duplication of an address can pose a severe risk to flight safety. In particular, the airborne collision avoidance system, ACAS II, performs on the assumption that only a single, unique 24-bit aircraft address per airframe exists. The performance of ACAS II can be seriously degraded and in some instances <u>disabled</u> if an incorrect or duplicate address is installed on an aircraft. 2.2 Incorrect or duplicated 24-bit aircraft addresses will also undermine the effectiveness of surveillance services based on SSR Mode S. 2.3 It is essential that aircraft operators comply with the aircraft address assignment procedures of the State regulatory authority to which blocks of addresses have been allocated by ICAO (note 2).

	2.4 The world-wide addressing scheme has been designed so that, at any one time, no address is assigned to more than one aircraft. Only one address can be assigned to an aircraft and it cannot be changed except under exceptional circumstances authorised by the State regulatory authority concerned. 2.5 When an aircraft changes its State of Registry, the previously assigned address is to be relinquished and a new address assigned by the new registering authority. 2.6 It is essential that the aircraft address is periodically verified using ramp tests. Such checks must also be conducted when a major maintenance check has taken place and when the aircraft has changed registration, to ensure that a newly assigned address has been properly set.
	3 CORRECT SETTING OF AIRCRAFT IDENTIFICATION 3.1 To comply with European airborne equipment requirements, Mode S transponder equipped aircraft must incorporate an Aircraft Identification Feature. Correct setting of aircraft identification is essential for the correlation of radar tracks with flight plan data in the ATM and Airport Operator ground systems. Initial operational trials using SSR Mode S have shown that many aircraft are transmitting incorrect aircraft identification, e.g. BC_1234 instead of ABC1234. Such erroneous settings of aircraft identification prohibit automatic flight plan correlation and, if perpetuated, will severely limit the effectiveness of Mode S to relieve the shortage of SSR codes. 3.2 In accordance with ICAO Doc 8168 <i>[PANS-OPS]</i> Vol. I, Part VIII, 1.3, flight crew of aircraft equipped with Mode S having an aircraft identification feature shall set the aircraft identification in the transponder. This setting shall correspond to the aircraft identification specified in item 7 of the ICAO flight plan, or, if no flight plan has been filed, the aircraft registration. 3.3 Aircraft Identification, not exceeding 7 characters is to be entered in item 7 of the flight plan and set in the aircraft as follows: Either, a) The ICAO three-letter designator for the aircraft operating agency followed by the flight identification (e.g. KLM511, BAW213, JTR25), when: in radiotelephony the callsign used consists of the ICAO telephony designator for the operating agency followed by the flight identification (e.g. KLM 511, SPEEDBIRD 213, HERBIE 25). Or, b) The registration marking of the aircraft (e.g. EIAKO, 4XBCD, OOTEK), when: 1) in radiotelephony the callsign used consists of the registration marking alone (e.g. EIAKO), or preceded by the ICAO telephony designator for the operating agency (e.g. SVENAIR EIAKO), 2) the aircraft is not equipped with radio. <u>Note 1</u> No zeros, dashes or spaces are to be added when the Aircraft Identification consists of less than 7 characters. <u>Note 2</u> Appendix 2 to ICAO Doc 4444 <i>[PANS-ATM]</i>, refers. ICAO designators and telephony designators for aircraft operating agencies are contained in ICAO Doc 8585.

3. State to insert local points of contact	4 FURTHER INFORMATION Further information or guidance may be obtained from: (Note 3) More general information concerning SSR Mode S in the context of the European Air traffic Management Programme (EATMP) is available at the EUROCONTROL Web Site Address: http://www.eurocontrol.int/mode_s/
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12/2004

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1 MODE "S" – AIRCRAFT IDENTIFICATION REPORTING

1.1 Introduction

1.1.1 Mode "S" transponder equipped aircraft when completely modified, will incorporate an aircraft identification feature requiring crew input. Initial operational trials in European airspace have indicated that many aircraft, fully fitted with Mode "S" and Mode "S" controls are transmitting incorrect identifications, e.g. **ABC_1234** instead of **ABC1234**. Such erroneous settings in operational Mode "S" airspace will prevent automatic flight plan correlation in both Air Traffic Management systems and airport operator ground systems. This aircraft identification feature, sometimes known as "flight identification" should not be confused with the "aircraft address" which is a unique ICAO code relating directly to the airframe in which the Mode "S" transponder has been installed and over which crews have no control.

1.1.2 The purpose of this FODCOM is to bring to the attention of UK operators the importance of the correct setting of the Mode "S" aircraft identification feature.

1.2 Background

1.2.1 ICAO Document 8168-OPS/611 Volume I (Procedures for Air Navigation Services) requires that flight crew of aircraft equipped with Mode "S" having an aircraft identification feature shall set the aircraft identification into the transponder. This setting is required to correspond to the aircraft identification that has been specified at Item 7 of the ICAO flight plan and consists of no more than seven characters. If the aircraft identification consists of less than seven characters, no zeros, dashes or spaces must be added. If no flight plan has been filed, the setting needs to be the same as the aircraft's registration, again, up to a maximum of seven characters.

(a) For an aircraft filing a flight plan, Item 7 consists of the ICAO three-letter designator for the aircraft operating agency, followed by a flight identification, e.g. KLM511, BAW213, JTR25. In these examples, when in radio contact with an ATC unit, the flight is identified to the unit, by the use of the appropriate ICAO telephony designator for the operating agency, followed by the flight identification, i.e. "KLM 511", "SPEEDBIRD 213", or "HERBIE 25", as appropriate.

(b) If a flight plan is not filed, or the aircraft is not equipped with radio, the Mode "S" aircraft identification to be set consists of the registration marking of the aircraft, e.g. GXXXX, 4XBCD, OOTek, again with no additional zeros, dashes or spaces. For radio telephony purposes, (for aircraft equipped with radio), the ICAO telephony designator to be used in such cases consists of the registration marking alone (e.g. GXXXX), or the registration marking preceded by the ICAO designator for the operating agency (e.g. "REGULATOR GXXXX"), provided the agency has been issued with a designator.

1.2.2 The monitoring of the aircraft identification feature is already an essential part of individual States' Mode "S" implementation programmes. One State's monitoring programme has revealed that the majority of aircraft equipped with Mode "S" were transmitting either erroneous or "no aircraft ID" signals. In operational Mode "S" airspace the use of an incorrect address will render the task of ATC more difficult and the level of service provided may not be the same as that provided to aircraft transmitting the correct and filed identification.

FLIGHT OPERATIONS DEPARTMENT COMMUNICATION - 12/2004

2 Recommendation

- 2.1 Operators are recommended to bring the above information to the attention of their flight crews, and to ensure that operations manuals contain appropriate procedures to cover the correct setting of the Mode "S" aircraft identification feature.

3 Further Information

- 3.1 Further information on this matter can be obtained from:

Flight Operations Policy
Safety Regulation Group
Aviation House 1W
Gatwick Airport South
West Sussex
RH6 0YR

e-mail: chris.gash@srg.caa.co.uk

Telephone: 01293 573521

Captain M A Vivian
Head Flight Operations Department
22 July 2004

Recipients of new FODCOMs are asked to ensure that these are copied to their 'in house' or contracted maintenance organisation, to relevant outside contractors, and to all members of their staff who could have an interest in the information or who need to take appropriate action in response to this Communication.