International Civil Aviation Organization

AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST SEMINAR AND FOURTEENTH MEETING OF AUTOMATIC DEPENDENT SURVEILLANCE – BROADCAST (ADS-B) STUDY AND IMPLEMENTATION TASK FORCE (ADS-B SITF/14)

Christchurch, New Zealand, 14 – 17 April 2015

Agenda Item 8   Any other business

OPERATIONAL USE OF MODE S AND DAPs

(Presented by Airways New Zealand)

SUMMARY

This paper describes the New Zealand current and planned use Mode S (SELECT) data and Downlink of Aircraft parameters (DAPs).

1.   INTRODUCTION

1.1.   Downlinked Aircraft Parameters (DAPs) extracted by Surveillance systems from registers within an aircraft or squitted as part of a MODE S or ADS-B transmission provide the basis for enhancing surveillance and safety within an Air Traffic Management System.

1.2.   The squitted or extracted data is provided within CAT20, 21 or 48 messages sent for processing by the Surveillance Data Processor (SDP) and the Safety Net (SNET) systems within an Air Traffic Management System (ATMS).

2.   CURRENT APPLICATIONS - MODE S Data

2.1.   New Zealand began operational use of DAPs in 2013. Currently this use is limited to 2 data items:

Aircraft Identification (Flight ID):

- Squitted or obtained from BDS 2,0;

- Used as a method to correlate surveillance tracks (Radar, WAM, and ADS-B) to flight plans when a MODE A code is not available or does not match the code within the flight plan;

- Used to identify VFR or IFR flights which aren't correlated to a flight plan;

- Mismatch between transmitted Flight ID and ACID in FPL for correlated tracks is alerted to controllers via the datablock associated with the track. Enables controller to acknowledge alert and have PIC set the correct Flight ID.

Unique ICAO MODE S address (MODE-S "hex code")

- Used as a method to correlate surveillance tracks (Radar, WAM and ADS-B) to flights plans when a MODE A code is not available or does not match the code within the flight plan;

- Entry of the ICAO MODE S address in a FPL is optional in New Zealand domestic airspace - entered in Field 18 of the FPL – e.g. CODE/C81818. The insertion of a MODE S address in field 18 is a common practice for International flights arriving/departing New Zealand;

- Mismatch between transmitted MODE S address and MODE S address entered in FPL is alerted to controllers via the datablock associated with the track. Enables controller to acknowledge alert and if appropriate correct FPL to display MODE S address being transmitted.

2.2. namely: There have been issues observed with the application of each DAPs data item, namely:

- The application of Flight ID has created one commonly observed issue of incorrectly set flight IDs. Incorrectly set Flight ID's can and do generate excessive alerting due to poor application by flight crew;

- The application of MODE S address has seen one observed occurrence, over 17 months of use, of the MODE S address transmitted by an aircraft not matching the data inserted in the FPL.

- The application of MODE S address has seen several occurrences (3 times since 2013) of multiple aircraft transmitting the same MODE S address. Such address duplication is alerted to controllers via flight datablocks who can then acknowledge the alert and ensure aircraft are kept separated by 6NM or more to ensure both targets continue to be interrogated and processed by the surveillance systems.

    o *Note: inside of 6NM, surveillance systems may confuse surveillance tracks, swap track ID's and/or drop one track from processing, all of which have consequences to ATC controlling the aircraft and the ATM systems trying to process the data correctly.*

2.3.   The key learning that has been identified in the application of DAPs so far is both the Regulatory Authority and ANSP need to ensure appropriate training material is provided to equipment installers, airline operations, flight crews and controllers and methods are in place to alert the PIC or Operator of an issue when it is observed.

3.   FUTURE INTENTIONS

3.1.   Airways plan introducing ATC automation capability to use "Selected Level" and "Barometric Pressure Setting" from BDS 4,0 in 2015-2016 financial year. The use of a full range of DAPs is envisaged for a future ATM system.

4.   ACTION BY THE MEETING

4.1.   The meeting is invited to:

a)   note the information contained in this paper; and

b)   discuss any relevant matters as appropriate.

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