

**Twenty Fourth Meeting of the
Informal South Pacific ATS Co-ordinating Group (ISPACG/24)**

Brisbane, Australia, 11-12 March 2010

Agenda Item 5: Identify Future Work Programs

**SUMMARY OF THE TRIAL-USE OF AUTOMATIC DEPENDENT SURVEILLANCE –
BROADCAST FOR ESTIMATING AIRCRAFT ALTIMETRY SYSTEM ERROR**

Presented by the United States and Australia

SUMMARY

This information paper presents a summary of work undertaken by the United States and Australia to validate the use of Automatic Dependent Surveillance – Broadcast (ADS-B) for monitoring aircraft Altimetry System Error (ASE). The work is being progressed under a formal joint research activity between the FAA Technical Center and Airservices Australia, and follows on from previous flight tests conducted by the FAA. The results of these previous flight tests conducted by the FAA supported the use of ADS-B data to monitor height-keeping performance of aircraft.

1. INTRODUCTION

- 1.1. The United States presented working paper WP/02 to ISPACG/23 that detailed results of test flights conducted to investigate the use of Automatic Dependent Surveillance – Broadcast (ADS-B) data for the estimation of aircraft Altimetry System Error (ASE). These test flights were undertaken by the FAA Technical Center and were completed using Global Positioning System (GPS) receivers equipped with Wide Area Augmentation System (WAAS) corrections and with WAAS corrections disabled. The results showed that the WAAS disabled, or aircraft geometric height data obtained from a system without WAAS corrections, is sufficient for estimating aircraft ASE.
- 1.2. The ICAO Separation and Airspace Safety Panel (SASP) and the ICAO Asia/Pacific Regional Airspace Safety Monitoring Advisory Group (RASMAG) have strongly encouraged work to continue that would assess the viability of using ADS-B geometric height data as a means of estimating ASE. To progress this work, both Australia (represented by Airservices Australia) and the United States (represented by the FAA) agreed to work cooperatively in a formally recognized research project that utilized data available from the extensive ADS-B network in Australia, and the software and expertise available in the United States used for estimating ASE.

2. DISCUSSION

- 2.1. The FAA and Airservices Australia presented WP/24 to SASP-WG/WHL/16 that provided details on the cooperative research agreement (Reference 1). Reference 1 also provides some initial results of the ASE estimates from the various ADS-B ground stations in Australia.

3. SUMMARY AND CONCLUSION

- 3.2. The FAA and Airservices Australia have established a cooperative research agreement to further progress the investigation on the use of aircraft geometric height data derived from ADS-B sources for estimating aircraft ASE. Work under this agreement commenced during the week of 31 August 2009, in Canberra, Australia, where the group successfully processed a week's worth of ADS-B data using the AGHME processing software.
- 3.3. The initial ASE estimates vary by location of the ADS-B ground station. There are many factors to be considered to determine the exact cause, or causes, for these differences, including the different mix of aircraft types passing over each ground station. The ADS-B ground stations themselves are unlikely to cause the difference since their role is to simply relay the available data. However, a bias may be introduced into the results due to the available meteorological information for the airspace covered by the ADS-B ground station. The group is investigating the cause of the observed bias in the ASE estimates by ADS-B ground station. Further progress will be reported to the upcoming SASP/WG/WHL/17 meeting in May 2010.

4. ACTION BY THE MEETING

- 4.1. The meeting is invited to note the information provided in this paper.

References

1. "Trial-Use of the Automatic Dependent Surveillance-Broadcast Data for Monitoring Aircraft Altimetry System Error", ICAO SASP/WG/WHL/16 WP/24, Auckland, New Zealand, 9 to 20 November 2009.