Twenty-First Meeting of the Cross Polar Trans East Air Traffic Management Providers' Work Group (CPWG/21)

(Montreal, Canada, 17-20 May 2016)

Agenda Item 5: Provide Status on CPWG/20 Actions

Implementation of Automatic Dependent Surveillance-Broadcast (ADS-B) In-Trail Procedure (ITP)
(Action Item CP-12)

Presented by the United States (U.S.) Federal Aviation Administration (FAA)

SUMMARY

This paper presents information on development of automation and procedures to support use of the ADS-B ITP in the FAA's Oceanic Flight Information Regions (FIRs)

1 Introduction

1.1 Automatic Dependent Surveillance – Broadcast (ADS-B) In-trail Procedure (ITP) is designed to improve service to properly equipped aircraft by allowing an oceanic air traffic controller to have an option for granting an altitude change request when other standard separations, such as Automatic Dependent Surveillance – Contract (ADS-C) distance-based 30 nautical miles (NM) longitudinal separation minima, do not allow for a climb or descent through the altitude of a blocking aircraft.

1.2 The ADS-B ITP is different from the Automatic Dependent Surveillance-Contract (ADS-C) Climb/Descent Procedure (CDP) in that it is a pilot-requested climb or descent through blocking traffic using ADS-B In equipment on the aircraft. With ADS-B ITP, the maneuvering (trailing or leading) aircraft obtains the flight identification (ID), altitude, position, and ground speed transmitted by proximate ADS-B Out equipped non-maneuvering aircraft. Based on the ADS-B data from the non-maneuvering, or reference aircraft, a pilot can request clearance from ATC for an ITP altitude change. The controller verifies that the ITP and reference aircraft are same direction traffic and that the maximum closing Mach differential is less than, or equal to, a Mach number of 0.06. If the controller determines that the requesting aircraft will maintain standard separation minima with all aircraft other than the ITP reference aircraft, a clearance for the climb or descent may be issued. After re-validating that the ITP initiation criteria are still valid, the maneuvering aircraft may then vertically transition through the altitude of the non-maneuvering aircraft utilizing the 10 NM ITP longitudinal separation standard (15 NM at initiation of the ITP).

1.3. Since December 2011, Oakland Air Route Traffic Control Center (ARTCC) has conducted a manual operational trial of the ADS-B ITP. The trial began in the South Pacific (SOPAC), but has been expanded to include the entire Oakland Oceanic FIR.

1.4. The ADS-B ITP procedure is published in the Procedures for Air Navigation Service- Air Traffic Management (PANS-ATM) Doc. 4444 5.4.2.7.

2 Discussion

2.1 Similar to work undertaken with ADS-C CDP, the FAA began work to automate the manual checklist criteria into its Advanced Technology and Oceanic Procedures (ATOP) system. Software development is complete, the ATOP automation is available at all three facilities and is undergoing testing.

2.2. The FAA has developed procedures for FAA Order JO 7110.65, Air Traffic Control, and the U.S. Aeronautical Information Publication (AIP), with expected publication in May 2016. The FAA's procedures mirror those of PANS-ATM Doc. 4444 5.4.2.7, with the exception of a difference at 5.4.2.7 .3.2 d), which states:

5*.4.2.7.3.2. A controller may clear an aircraft for an ITP climb or descent provided the following conditions are satisfied:*

d) both the ITP aircraft and reference aircraft are either on;

1) same identical tracks and any turn at a waypoint shall be limited to less than 45 degrees; or

2) parallel tracks or same tracks with no turns permitted during the manoeuvre.

2.3. ATOP is designed to check for turns that maintain or increase required separation during the ITP. Therefore, aircraft on same tracks with a turn would be permitted to perform the ITP if ATOP determines that there would be no degradation in required separation. Accordingly, the procedure has been drafted to reflect the following:

X. Clear an aircraft for an ADS-B ITP climb or descent provided the following conditions are satisfied:

x) both the ITP aircraft and reference aircraft are either on:

(a) same identical tracks and any turn at a waypoint shall be limited to less than 45 degrees; or

(b) same tracks with no turns permitted that degrade required separation during the ITP.

2.4. All required Safety Management System (SMS) work is completed and the ATOP Automated use of the procedure has been approved by the FAA Air Traffic Safety Oversight (AOV) organization.

2.5. As noted in 2.1 of this paper, ATOP automation is undergoing pre-implementation testing at all three oceanic facilities presently. Prior to implementation, controller training and publication of the procedure in appropriate FAA documents must take place. It is expected that the ADS-B ITP will be fully implemented by mid-CY 2016.

3 Recommendation

3.1. The Meeting is invited to note the information provided in this paper.