



**Combined Fourth Meeting of Arabian Sea/Indian Ocean ATS Coordination Group
(ASIOACG/8) and Fourth Meeting of Indian Ocean Strategic Partnership to Reduce Emissions
(INSPIRE/4)**

Melbourne, Australia 25th November – 29th November 2013

Agenda Item 3: ATM Issues – Air Traffic Flow Management

**Development of Long Range Air Traffic Flow Management (ATFM) for use in Australian Airspace
(Presented by Airservices)**

SUMMARY

This Information Paper describes the ongoing development of a Long Range Air Traffic Flow Management (ATFM) system for use in Australian Airspace at Sydney and other aerodromes.

1. INTRODUCTION

- 1.1 Air Traffic Flow Management (ATFM) is a Global Plan Initiative in the ICAO Global Air Navigation Plan (GANP, Doc 9750). The GANP defines ATFM as *“the implementation of strategic, tactical and pre-tactical measures aimed at organising and handling traffic flows in such a way that the totality of the traffic handled at any given time or in any given airspace or aerodrome is compatible with the capacity of the ATM system”*.
- 1.2 The ICAO Global Air Traffic Management Operational Concept (GATMOC, Doc 9854) describes two components of the future ATM system that relate to ATFM:
 - a) Demand and Capacity Balancing; and
 - b) Traffic Synchronisation.
- 1.3 In the Australian ATM Strategic Plan these two components are considered as a single issue: Demand and Capacity Management (DCM). The Plan states that DCM *“establishes maximum system capacity and optimal flow by minimising conflicting user needs, and optimisation of system performance in the presence of imposed constraints”*. Airservices has established a department dedicated to managing DCM that aims to work with airlines and airports to strategically improve air traffic flow management and to pre-tactically balance demand expectations against network and aerodrome-specific capacity.

- 1.4 Additionally, ATFM is described as a critical ASBU Block 0 element in the Asia Pacific Seamless ATM Plan. According to the plan “*ATFM is one of the solutions to ensure a sustainable air traffic growth for the future. Inter-linked and networked ATFM nodes between ANSPs should be developed to serve various sub-regions*”.
- 1.5 Airservices currently uses two systems to facilitate DCM at Australia’s major aerodromes: Maestro, which operates in the tactical sphere (within approximately 200 NM of the aerodrome) and is used by Air Traffic Controllers to make final modifications to the landing sequence; and Harmony, which operates in the pre-tactical sphere (outside approximately 200 NM of the aerodrome) and is used to make changes to the strategic plan of slot allocation by allocating ground delays and Calculated Off-Blocks Times (COBTs) to domestic flights.
- 1.6 Under the current system when demand exceeds capacity, Maestro is used to allocate tactical delay to all flights. However, Harmony is used to allocate pre-tactical delay to domestic flights only. This results in an inequitable distribution of delay at capacity constrained aerodromes when domestic flights are pre-tactically delayed on the ground and then tactically delayed in the air due to the addition of long range flights to the sequence.
- 1.7 As delays are not issued to long range flights until in the tactical sphere, long range flights normally maintain cruise speed until within 200 NM of destination in order to maintain their place in the sequence. These long range flights may then be instructed to conduct mid-level and/or low-level holding as they are sequenced with domestic flights for landing.
- 1.8 During the most recent Northern Summer Scheduling Season, Airservices implemented a procedure whereby flights arriving at Sydney airport during the post-curfew hour (0600-0700 local time) could be de-prioritised by up to 30 minutes should they arrive more than 20 minutes before their strategic slot allocation; however, long range flights are still processed on a “first come, first served” basis that limits early intervention by controllers and flight crews. The result is that any holding resulting from this procedure occurs in the arrivals area at sub-optimal levels.

2. **DISCUSSION**

- 2.1 In order to overcome the limitations of the current system in dealing with DCM, Airservices has engaged Metron Aviation to assist in the implementation of a Long Range ATFM system for the Australian-administered Flight Information Regions (YBBB, YMMM, AGGG and ANAU). The introduction of Long Range ATFM is intended to:
- a) improve predictability of the arrivals flow by including all aircraft in pre-tactical planning;
 - b) improve equitability of delays between long range flights and domestic flights by assigning some pre-tactical delay to long range flights; and
 - c) reduce the occurrence of arrival area holding for long range flights by assigning some delay in the cruise phase without jeopardising their place in the sequence.
- 2.2 Under the proposed system, long range flights that are not subject to the Australian Ground Delay Programme (GDP), and instead currently receive all their delay in the arrival area will be assigned all or part of that delay in the en route phase of flight. This will be achieved by en route controllers assigning the flight a time to cross a point approximately 200 NM from destination.
- 2.3 By assigning delay in the cruise phase, it is intended that these long range flights may absorb delay at an optimal level for efficiency using one or more techniques for reducing ground speed such as a reduction in cruise speed, level changes and amended routes.

- 2.4 The quantum of delay that long range flights are able to absorb in the en route phase will be recorded and used to position the flight in the arrivals sequence using the tactical Maestro tool. In this way, during periods of delay, long range flights may begin to slow when still a number of hours from arrival without losing their place in the landing sequence.
- 2.5 By delaying arrival through a reduction in speed at cruising levels rather than in medium- to low-level holding patterns, airlines will achieve a reduction in fuel burn and CO₂ emissions, increased passenger comfort through the reduction of holding patterns flown, and controller workload will be reduced by the smoothing of demand at aerodromes.
- 2.6 Airservices and Metron Aviation have conducted a number of stakeholder meetings and simulations as part of the Concept Engineering phase of development of the Long Range ATFM system. The following bodies have participated in these meetings and/or simulations:
- a) Air New Zealand;
 - b) Cathay Pacific;
 - c) Emirates;
 - d) Garuda Indonesia
 - e) International Air Transport Association;
 - f) Qantas;
 - g) Singapore Airlines;
 - h) United Airlines; and
 - i) Virgin Australia.
- 2.7 Implementation of the Long Range ATFM system is envisaged for Sydney during the Northern Summer Season of 2015.
- 2.8 Once a Post Implementation Review of the Sydney implementation has been completed, it is planned that Long Range ATFM will be deployed at Brisbane, Melbourne and Perth during the remainder of 2015.

3. ACTION BY THE MEETING

- 3.1 The meeting is invited to note the development of a Long Range ATFM system for implementation in Australian airspace.