



WORKING PAPER

ASSEMBLY — 41ST SESSION

TECHNICAL COMMISSION

Agenda Item 32: Aviation Safety and Air Navigation Regional Implementation Coordination Mechanisms

IMPLEMENTATION OF COLLABORATIVE AIR TRAFFIC FLOW MANAGEMENT

(Presented by Japan)

EXECUTIVE SUMMARY

ATFM (air traffic flow management) is a key element in reducing CO₂ emissions by enhancing safety and efficiency while reducing airborne holding time and ground taxiing time.

The growth in international traffic volume in the Asia and Pacific (APAC) Region has increased the need for cross-border ATFM rather than stand-alone ATFM.

There are various methods of cross-border ATFM. However, the linkage of ATFM, airport-collaborative decision making (A-CDM), arrival manager (AMAN), departure manager (DMAN), surface manager (SMAN) and other related systems enables more efficient ATFM, minimizes engine run-up time, and has a significant effect on reducing CO₂ emissions.

Action: The Assembly is invited to:

- a) note Japan's plans to implement AMAN/DMAN/SMAN and its integration of ATFM and A-CDM, which consequently contribute to the reduction of CO₂ emissions;
- b) encourage to recognize that the implementation of seamless cross-border ATFM can reduce CO₂ emissions from aviation and to further actively coordinate with neighbouring States to provide efficient traffic flow; and
- c) urge ICAO and its States to create planning and implementation regional groups (PIRGs) or other appropriate forums in each area to share issues and challenges in addressing cross-border ATFM.

<i>Strategic Objectives:</i>	This working paper relates to the Air Navigation Capacity and Efficiency Strategic Objective.
<i>Financial implications:</i>	Nil.
<i>References:</i>	Doc 9971, <i>Manual on Collaborative Air Traffic Flow Management</i>

1. INTRODUCTION

1.1 The Japan Civil Aviation Bureau (JCAB) established an ATFM (air traffic flow management center) in Fukuoka in 1994 and initiated the provision of ATFM (air traffic flow management) service within the Fukuoka flight information region (FIR) except for the oceanic airspace. Since 2005, the air traffic management center (ATMC), which evolved from ATFM to efficiently utilize airspace and ensure safety and smooth air traffic flow, has provided ATFM integrated with airspace management for training areas.

1.2 Fukuoka ATMC established the collaborative decision making (CDM) process with aircraft operators, the air traffic control (ATC) unit, meteorological (MET) officers, military liaisons and so on, and hence has implemented mature ATFM for domestic flights, using ground delay program (GDP) as the main measure.

1.3 The breakdown of traffic in the Fukuoka FIR under Fukuoka ATMC's jurisdiction was approximately 50 per cent domestic flights, 35 per cent international flights between airports in Japan and abroad, and 17 per cent overflights passing through the Fukuoka FIR, with flights crossing the FIR boundary accounting for approximately 50 per cent, and these cross-border flights have been on the rise (as of 2019).

1.4 Fukuoka ATMC has collaborated with adjacent FIRs and implemented cross-border ATFM, and hence has provided ATFM for international flights. The major measures for international flights include, for example, miles in trail (MIT) and minutes in trail (MINIT) provided in-flight.

1.5 The APAC Region has many relatively small FIRs, some of which do not even have an ATFMU. In order to cope with the complex traffic flow, the APAC Region, with the ICAO APAC Regional Office, continues to promote the multi-nodal ATFM network concept with the aim of establishing cross-border ATFM.

1.6 To accommodate the increasing traffic demand in the APAC Region, ATMC has been working on the implementation of cross-border ATFM within sub-regions, in addition to coordination with adjacent FIRs.

2. DISCUSSION

2.1 About half of the international flights handled at Fukuoka FIR are between Japanese domestic airports and Asian States. In particular, since there are many flights between the three neighbouring States of China, Japan, and Republic of Korea, a framework called NARAHG (Northeast Asia Regional ATFM Harmonization Group) was established to implement and develop a sub-regional cross-border ATFM, and together the three States have been working to provide seamless traffic flow management.

2.2 Each State participating in NARAHG had already implemented ATFM for domestic flights. The next step was to implement seamless Cross-border ATFM for international flights that cross the FIR boundary by specifying the time of the crossing of the FIR boundary: calculated time over (CTO). Specifying CTOs for aircraft enables the reduction of unnecessary delays in the FIR of the destination airport.

2.3 In addition, specifying the CTO at an earlier time, would allow ATFMUs in the receiving adjacent FIRs to calculate GDP based on the designated CTO. Also, aircraft flying in adjacent FIRs will be able to reduce delays in the air, thereby contributing to the reduction of CO2 emissions. It will also significantly reduce the time required for the coordination of ATFM across the FIR boundary between related ATFMUs.

2.4 Meanwhile, Fukuoka ATMC has been considering the implementation of cross-border ATFM not only with the neighboring Taipei ACC, but also in the Sub-Region of Southeast Asia where the AMNAC (APAC Multi-Nodal ATFM Collaboration) is leading. This sub-region, has been conducting trials to implement Cross-border ATFM that specifies calculated take-off time (CTOT), one of the methods of GDP, which is a multi-nodal concept, mainly with States such as Hong Kong China, Thailand, and Singapore.

2.5 The designation of CTOTs for aircraft does not impose the burden of imposing time limits at multiple locations for international flights that cross multiple FIRs. In addition, the ATFMUs related to the flight does not need to coordinate with the ATFMUs located one or more FIRs beyond the location of the aircraft in flight regarding transit time restrictions, etc. at the FIR boundary from the original ATFMU. Thus, this method is beneficial to both aircraft operators and air navigation services provider (ANSPs).

2.6 At Tokyo International Airport (RJTT) in Japan, GDP has been applied to domestic flights and DMAN/SMAN implementation has been successful in reducing ground delays. If it becomes possible to specify CTOT for international flights, it will be possible to provide the benefits of DMAN/SMAN implementation to international flights as well.

2.7 As noted in Paragraph 1.3, the application of CTOs and CTOTs to address the growing trend of international flights crossing the FIR boundary will lead to reduce more airborne holding. International coordination across neighbouring States and throughout wider region will provide sustainable operational environment for aircraft operators and help airspace operators to perform more efficient airspace operations.

3. CONCLUSION

3.1 This paper notes that JCAB plans to introduce the implementation of AMAN/DMAN/SMAN and promote the integration of ATFM and A-CDM, and consequently contribute to the reduction of CO2 emission.

3.2 JCAB encourages ICAO and its Member States to recognize that the implementation of seamless Cross-border ATFM can reduce CO2 emissions from aviation sector and to further actively coordinate with neighboring States to provide efficient traffic flow.

3.3 JCAB urges ICAO and its Member States to create PIRGs or other appropriate forums in each area to share issues and challenges in addressing cross-border ATFM.