International Civil Aviation Organization

Eleventh Meeting of the Air Traffic Management Sub-Group (ATM/SG/11) of APANPIRG

Singapore, 2 – 6 October 2023

Agenda Item 5: ATM Systems (Modernization, Seamless ATM, CNS, ATFM)

IMPLEMENTATION AND TRAIL OPERATIONS OF POINT MERGE ARRIVALS AT BEIJING CAPITAL INTERNATIONAL AIRPORT

(Presented by CHINA)

SUMMARY

This paper introduces the trial operation of the Point Merge arrivals implemented at Beijing Capital International Airport from April 2023. China has implemented PMS approach procedures at major airports since 2019. The PMS procedures for Beijing Capital Airport was designed and evaluated in late 2020, and trial operation began in April 2023. The trial operation has achieved the expected goals, and ATCOs have accumulated a lot of operating experience. At the same time, it also provides support for the continuous optimization of the PMS program.

1. INTRODUCTION

1.1 In order to further enhance airspace capacity, effectively reduce the impact of complex operating environment on operational safety and efficiency, and prevent overcapacity operation, China has actively promoted the implementation of PMS in recent years.

1.2 The PMS arrival procedures of Beijing Capital Airport was published in late 2020, and trial operation was first carried out in April 2023. The PMS arrival procedures of Beijing Capital Airport mainly solve the problem of the arrival sequence from points DUGEB (DUGEB-8XA) and GUVBA (GUVBA-8YA) in south operation and are used to replace the traditional DUGEB-8YA/8ZA and GUVBA-8ZA arrivals.

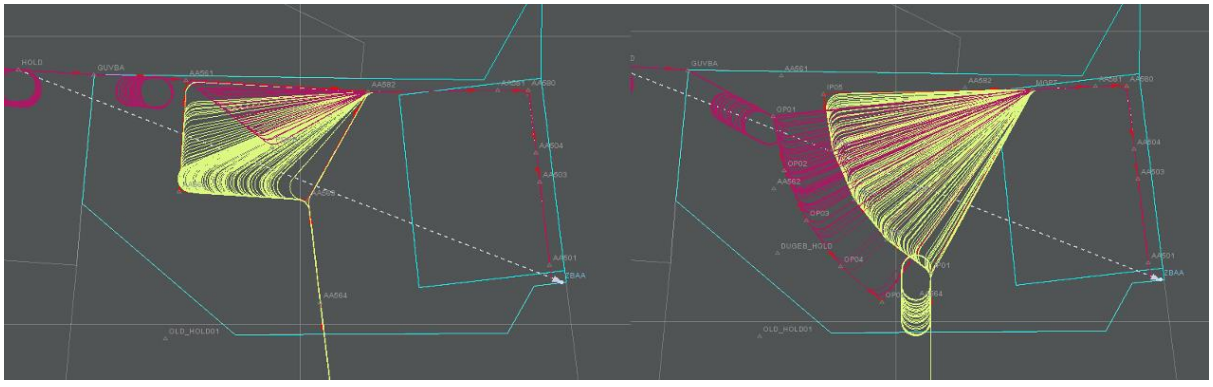

Figure 1: Flight paths of original RNAV and PMS arrivals (simulated)

1.3 The design goals of the PMS arrivals, compatible with RNAV1 specification, are to increase the safety margin, reduce ATCO's workload, optimize the descent profile, and reduce emissions. As of mid-August 2023, a total of over 7,500 flights have used those arrival procedures. Through the simulator practice and trial operation, ATCOs accumulated necessary experience and gradually adapted to the change of the sequencing method.

1.4 The trial operation confirmed that the PMS program at Beijing Capital Airport has reached the design standard and provided support for the continued optimization of the program in the later stage.

2. DISCUSSION

Operational challenges

2.1 Due to the existence of prohibited fly over area and airspace restrictions, the PMS arcs cannot be designed long enough to accommodate more aircraft. The number of aircraft for the entire PMS arcs is limited to 6.

2.2 Since the altitude on the PMS is relatively high (over 10,000 feet on average) and west and northwest winds prevail in Beijing all the year round, the ground speed of the aircraft in the PMS arcs is relatively high. Although the IAS is limited to 230 knots on arcs, the ground speed generally exceeds 260 knots, which further reduces the flight time of the aircraft on the arc.

2.3 The altitude limit at GUVBA is slightly higher and the aircraft at GUVBA is normally in the process of being handed over from ACC to TMA which results in discontinuous subsequent descents or violation of level restrictions when joining the lower arc. The working habits of ATCOs also need to be adjusted to meet the needs of continuous descents.

Plans for further optimization

2.4 In near term, plans have been made to further optimize the connection points of the inner arc and outer arc, the far-end approach route and specific height settings. ATCO training of cooperating with the continuous descent of the aircraft will also been strengthened. In the long run, consideration will be given for the collaborative use of PMS procedures and A-MAN system.

3. ACTION BY THE MEETING

3.1 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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