International Civil Aviation Organization

Thirty-Fifth Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/35)

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Agenda Item 3.2: Performance Framework for Regional Air Navigation Planning and Implementation – ATM

REQUIREMENT TO AMEND TRANSITION ALTITUDE ESTABLISHMENT CRITERIA IN PANS-OPS VOLUME III

(Presented by Pakistan)

SUMMARY

This paper presents the requirement to review the criteria for establishment of transition altitude contained in Section II Chapter 2 of PANS-OPS VOL III – Aircraft Operating Procedures (ICAO Doc 8168).

Strategic Objectives:

A*: **Safety** – Enhance global civil aviation safety*

B: ***Air Navigation Capacity and Efficiency** – Increase the capacity and improve the efficiency of the global aviation system*

1. INTRODUCTION

1.1 Procedure for Air Navigation Services (PANS) do not carry the status afforded to Standards & Recommended Practices adopted by the Council as Annexes to the Convention. However, they are adopted by the Council and are recommended to Contracting States for worldwide application. The implementation of procedures is the responsibility of Contracting States. The provision of Annex 15 related to the publication requires States to publish lists of significant differences between their procedures and the related ICAO procedures in their Aeronautical Information Publications.

1.2 The provisions relevant to criteria for establishment of transition altitude contained in PANS-OPS Volume III – Aircraft Operating Procedures (ICAO Doc 8168) Section II Chapter 2 requires that a transition altitude shall **normally** be specified for each aerodrome by the State. The provisions also require that the **height above the aerodrome of the transition altitude shall be as low as possible** but normally not less than 900 m (3000 ft).

1.3 The current provisions containing criteria for establishment of transition altitudes were incorporated in decade of 60's. The advancement in technologies and operating procedures have necessitated major shift where number of states does not consider it in the fitment of safety to establish transition altitude as low as possible. It is therefore need of time that criteria should be reviewed by ICAO so that States should be able to implement relevant provision in their national framework.

2. DISCUSSION

2.1 A number of factors have remained under deliberation during last 2 decades in the global aviation industry on the criteria for establishment of transition altitude. Few aspects are highlighted again in subsequent paras for consideration.

Terrain Clearance

2.2 The altimeter corrections required to determine the true altitude from which the pilot can determine actual height above terrain can be complex enough and time consuming to be error prone or mis-applied. This could lead to a loss of pilot situation awareness resulting in a collision with terrain. In airspace where transition altitudes have been established at relatively low altitudes and terrain clearance is a factor, there can be a significant safety risk. However, if the aircraft operated on the local QNH to a higher TA, the risk of a terrain accident due to an uncorrected pressure differential error could be eliminated.

Airspace Management

2.3 Different philosophies are being used for setting the transition level by different states. Few states have established the provision where transition level is determined by ATC based on the current QNH while majority of states uses fixed Transition Level above the transition altitude so as to ensure minimum vertical separation between Transition Level and Transition Altitude for all QNH values. A low transition altitude (3000 ft) in this scenario results in blocking of airspace within transition layer which is vital for airspace management and Air Traffic Control especially in busy terminal control areas. Favorable arguments have also been made by various ATS forums on raising the transition altitude to a medium level (8-10,000ft) or high level (16-18000ft).

Efficiency of Terminal Procedures

2.4 Performance Based Navigation is being implemented worldwide to take advantage of associated benefits and to comply ICAO Assembly Resolution A37/11. Terminal procedures using PBN concept, if appropriately designed, can lead to significant benefits in terms of safety and efficiency of aircraft operations including the benefits from CCO/CDO implementation. However, lower transition altitude established around aerodromes did not allow real optimization of vertical profile because of significant variation of transition layer width. This becomes more complex where a conflict between arrival and departure has to be managed in PBN airspace designing close to aerodrome.

Harmonization

2.5 Harmonization of transition altitude is required under the relevant provision of PANS-OPS Volume III at national or regional level to the extent possible and within regions as well with agreements. A number of countries have therefore adopted the approach of a harmonized transition altitude not only at aerodromes inside its territory rather over its entire airspace. Several studies have also been conducted in ECAC Region which have emphasized the need for Harmonized European Transition Altitude for entire Europe. In states where terrain height is low and uniform, a common low transition altitude may be practicable. For states like Pakistan where significant differences exist in the aerodrome elevation for its aerodromes, it becomes impracticable to harmonize the transition altitude if it has to be kept as low as 3000ft above the aerodrome.

Cockpit Workload

2.6 Besides the harmonization, pilot forums are of general opinion that any transition altitude below 5000ft above aerodrome requires changing altimeter settings during critical departure and approach phases of flight. It results in an extra burden on the cockpit workload without any advantage or benefit.

CURRENT STATUS

2.7 A study of the APAC region has been made in the context. Within APAC Region, more than half of member states are also using transition altitude which falls in the medium level (above 8,000), significantly higher than 3000ft above aerodromes thus giving preference to harmonization rather than the PANS-OPS provision to keep Transition Altitudes lower close to 3000ft.

CONCLUSION

2.8 According to the PANS-OPS criteria, transition altitudes are required to be **as low as possible** generally 3000ft above aerodrome elevation. However, from the practical perspectives, numbers of constraints have been observed in application of the criteria. The use of medium level transition altitude by more than 20 States supports the thought presented in this paper that a review of ICAO criteria established in the decade of 1960's is real need of time. Pakistan, therefore, proposes to further discuss the matter at the fifteenth meeting of the Air Traffic Management Sub-Group (ATM/SG/15) scheduled in 2025.

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the information contained in this paper.

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