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)

MODERNIZATION OF ATM AND AIRSPACE CAPACITY OPTIMISATION INITIATIVES WITHIN COLOMBO FIR

(Presented by Sri Lanka)

SUMMARY

This paper presents the airspace capacity enhancement initiatives taken and modernization of ATM in Colombo Flight Information. These initiatives include recently accomplished application of distance based longitudinal spacing in Colombo FIR.

1. 50NM longitudinal Separation within Colombo Oceanic airspace (category R)
2. 5NM surveillance-based separations within Exclusive ADS B airspace and Multi Sensor ADS B Non Exclusive airspace (category S)
3. 30NM separation minima at the Transfer of Control Point of Male FIR and Colombo FIR boundaries (category S) using enhanced CNS facilities (long-range VHF coverage, CPDLC, ADS-B and ADS-C).
4. Commissioning of the new ATM System at Colombo Approach Control Center to enhance safety, efficiency and controller workload reduction through automation.

1. INTRODUCTION

1.1 Sri Lanka took initiatives to align with the seamless ANS separation standards for the provision of harmonized and consistent ATS within Asia/Pacific Region. These initiatives will bridge the gap between standards and the current practice while improving efficiency of Air Traffic Management. Further these initiatives enhanced optimum capacity of Oceanic and Surveillance airspaces of the Colombo FIR.

2. DISCUSSION

Application of 50NM longitudinal separation within Category R airspace

2.1 Colombo Oceanic airspace (category R) form FL 245 to FL 460 is declared as RNP 10 airspace. Implementation of 50NM longitudinal spacing between aircraft equipped with CPDLC significantly increased the relevant air route capacities which in turn allows aircraft a better chance to be assigned optimum cruising flight levels and improve fuel efficiency within Colombo RNP 10 airspace.

Application of 5NM surveillance separation within Category S airspace

2.2 ICAO PANS ATM DOC 4444 chapter 8, item 8.7.3 prescribes harmonization of 5NM surveillance separation minima for safety and capacity enhancement, economic benefits, and environment protection in all surveillance airspaces. 5NM horizontal separation minima in category S airspace based on RADAR and/or ADS B was implemented by replacing the previously existed 8NM and 10NM separation minima in the category S airspace of Colombo FIR. ADS-B will be the primary means of surveillance between FL460 to 10,000ft and two MSSRs (Piduru & BIA) will support as redundant surveillance systems.

2.3 Colombo FIR Category S Airspace Separation Application

Airspace	**Control Authority**	**Separation Standard (NM)**	**Upper limit /Lower limit**	**Lateral limit**	**Priority /Airspace**
TMA	Colombo Control	**5**	FL 460/ FL290 (Inclusive) Exclusive ADS B Airspace	230 to 330 NM from Piduru RADAR	**Priority - ADS B**
				230 NM from Piduru RADAR	**Priority - ADS B** ADS B + MSSR Multi Sensor Airspace
		5	FL290/ 10,000ft	230 NM from Piduru RADAR	**Priority - ADS B** ADS B + MSSR Multi Sensor Airspace ADS B Non-Exclusive

Application of 30NM surveillance separation at TOC within Category S airspace

2.4 The existence of the overlapping ADS B surveillance coverage between Male TMA (approximately 200NM) and Colombo TMA (330NM) category S airspaces and the long-range VHF coverage of Colombo TMA (300NM) enables to replace the 10 min. longitudinal separation minima with 30NM separation minima at the Transfer of Control Point (TOC) or common FIR boundary, FL245 to FL460 for flights between Male and Colombo.

2.5 However, the absence of seamless VHF coverage at the Transfer of Control Point at the common FIR boundary between Male and Colombo has been identified as a safety hazard. This is due to the limitations of the VHF coverage in Male, which does not have the adequate range up to the Transfer of Control Point or the common boundary.

2.6 In order to meet the ICAO seamless ANS plan requirements as well as to mitigate the safety hazard of not having DCPC with Male TMA, both Male and Colombo proposed a procedure which incorporated in the Male - Colombo LOA after a successful safety assessment and trial operations by both states, and 30NM longitudinal separation minima was implemented.

Commissioning of the new ATM System at Colombo Approach Control Center.

2.7 Airport & Aviation Services (Sri Lanka) (Private) Limited took the initiative to replace the Air Traffic Management System at Colombo Approach Control Center (serving category T Airspace in Sri Lanka) with a state of the art, fully automated ATM System with Mode S capability to enhance safety, efficiency, airspace utilization and controller workload reduction. Thales Group of France was chosen as the vendor, and they have supplied their latest version of the TopSky ATM System to Colombo Approach Control Center.

2.8 The system replaces the legacy ATM system with the introduction of modern safety-net features and Electronic Flight Progress Strips to Colombo Approach Control Center and the Aerodrome Control Tower of the Bandaranaike International Airport – Sri Lanka, which is expected to significantly modernize ATM Practices of the affected centers.

2.9 Having been successfully completed parallel operations, the ATM System is expected to be commissioned by October 2023.

2.10 Mode S feature to be integrated into the System with the replacement of one of the MSSRs, which is expected to be completed in a period of one year.

2.11 The Safety Management System continuously monitors the Hazard identification process for any new hazards identified with the application of these changes.

3. ACTION BY THE MEETING

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

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