



ICAO

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The First Meeting of the South Asia, Indian Ocean and
Southeast Asia ATM Coordination Group (SAIOSEACG/1)

Video Teleconference, 28 March – 01 April 2022

Agenda Item 4: Review of Current Operations and Problem Areas

APPLICATION OF 10 MINUTES SEPARATION ON CROSSING TRACKS IN OCEANIC AIRSPACE OF MUMBAI FIR

(Presented by Airports Authority of India)

SUMMARY

This paper presents the proposal to introduce the application of 10-minute separation on opportunity basis between ADS-B equipped aircraft flying on crossing tracks under Space Based ADS-B (SB ADS-B) Surveillance in the Oceanic airspace of Mumbai FIR. For the proposed separation, the establishment of two-way radio communication via VHF/HF or CPDLC connection for suitably equipped aircraft is considered mandatory.

1. INTRODUCTION

1.1 The Mumbai FIR, in addition to the continental portion of airspace, has jurisdiction over vast areas in Arabian Sea/Indian Ocean Region and services in a complex network of RNAV ATS Routes primarily catering to East-South East/West-North West traffic flows from and to airports between South-East Asia and Middle East, and beyond. Additionally, RNAV and Conventional ATS Routes provide connectivity between the Indian sub-continent and the African coastline. These ATS Routes intersect the East-South East/West-North West ATS Routes at multiple waypoints. For this crossing traffic over the portion of oceanic airspace, currently procedural separation of 15-minutes over the crossing points is being applied. (**Figure 1**: about 31 crossing points)

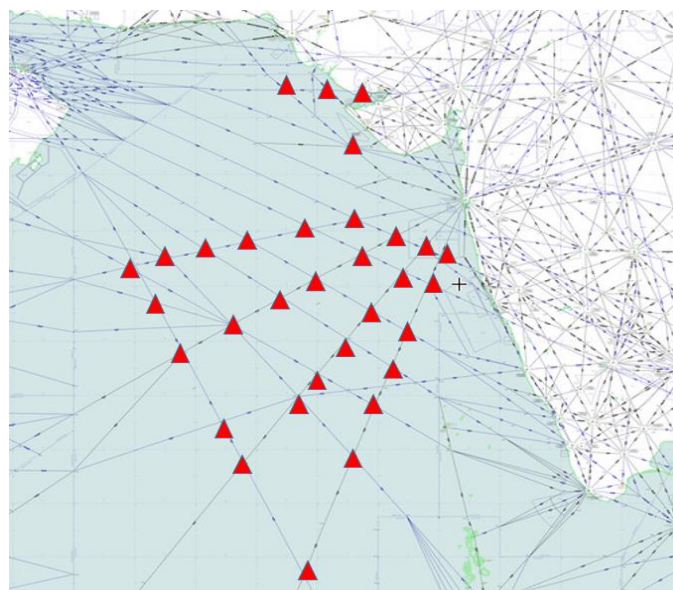


Figure 1: Opportunities for application of 10 min separation at crossing points in Mumbai Oceanic Airspace

1.2 This paper presents the proposal for introduction of application of 10-minute separation between aircraft on crossing tracks using SB ADS-B in Mumbai Oceanic Airspace.

2. DISCUSSION

2.1 The provision of ATS in Oceanic Airspace of Mumbai FIR is dependent on procedural position reporting via HF and establishing ADS-C/CPDLC connection with appropriately equipped aircraft.

2.2 The RNP 10 ATS Route structure catering to the predominant East-South East/West-North West traffic flow allows for the application of 50 NM Reduced Longitudinal Separation between suitably equipped aircraft connected with Mumbai CPDLC. However, in respect of aircraft on crossing ATS Routes between the Indian sub-continent and African coastline, 15-minute crossing separation has to be applied at crossing points. ATC Mumbai applies FLAS for some identified busy hours, in order to vertically separate these conflicting traffic flows and further resort to allocating preferred flight levels tactically.

2.3 The vast oceanic airspace of Mumbai, Chennai and Kolkata FIRs has long been serviced by ADS-C catering to FANS/1A equipped aircraft. Airports Authority of India, in 2021, introduced Space Based ADS-B (SB ADS-B) technology to provide a seamless dependent surveillance coverage of all ADS-B equipped Aircraft.

2.4 Following the successful trials of integration of SB ADS-B into the Mumbai ATS Automation System and the acceptance of safety assessment report, ATC Mumbai has been using the SB ADS-B data, for enhanced situational awareness and ATS provision within Mumbai Oceanic Airspace since August 2021.

2.5 Whereas, 15-minute separation minima between aircraft maintaining same level, climbing or descending, flying on crossing tracks is applied at the numerous crossing points in the portion of airspace over high seas, ICAO DOC 4444 does permit application of 10-minute separation minima in such cases where Navigation Aids permit frequent determination of position and speed .

2.6 Even though, in Oceanic Airspace, ground based Nav Aids are not available, the position information computed on board using GNSS, etc. along with other pertinent data (DAPs) is continuously broadcasted by the ADS-B OUT transmitter at an update rate comparable with other surveillance sensors (SB ADS-B provides every 8 Sec update to Mumbai ATS system). With the integration of SB ADS-B data, ATC is now given a very realistic and reliable air traffic situation through a display of ADS-B targets - the position and speed of which are frequently determined. Since inception of SB ADS-B in Mumbai, the percentage of non-ADS-B aircraft operating through the Mumbai Oceanic Airspace has been found to be almost nil, more so in view of the State mandate of carriage of ADS- B in Indian continental Airspace at or above FL 290.

2.7 From a communication perspective, approximately 60% of aircraft operating in Mumbai Oceanic Airspace are CPDLC equipped. Additionally, utilizing HF Networking Receivers using IP equipment at Mumbai, Chennai and Thiruvananthapuram has resulted in better performance of HF communication with all aircraft. Recent HF performance data indicates only about 10% of the total HF calls remained unanswered. Mumbai Oceanic Control Centre has also been additionally serviced by a VHF 135.75 MHz in the northern sub sector. Availability of Satellite phone also provides for an emergency backup.

2.8 The ATS automation system has multiple tools such as Min Sep, RBL, PTL, system calculated waypoint Estimates, Ground Speed, etc. to support controllers to check and verify separations, Estimates, speed etc.

2.9 Availability of Surveillance with Space Based ADS-B, improved performance of HF and availability of ADS-C/CPDLC, supports the safe application of 10-minute separation between aircraft on crossing tracks.

2.10 It is proposed to implement application of 10-minute horizontal separation on crossing tracks on opportunity basis only between the aircraft that its ADS B tracks have been correlated with CPL and the aircraft that are in positive contact with Mumbai OCC on voice (HF/VHF) or CPDLC. It is proposed to conduct trial operations for the same period of three months from 1 May 2022.

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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