



**Seventh ATS Coordination Meeting of Bay of Bengal, Arabian Sea
and Indian Ocean Region (BOBASIO/7)
New Delhi, India, 18 - 19 September 2017**

**AGENDA ITEM 6: ATM coordination (Airspace Restructuring, AIDC Implementation, AIS,
ATM Contingency Plan- Level 1 and Level 2 and SAR Agreements)**

ENHANCING ENROUTE CAPACITY OVER THE BAY OF BENGAL

(Presented by Singapore)

SUMMARY

This paper presents the proposal to explore the enhancement to capacity over the Bay of Bengal area to cope with the increasing demand of flights operating through the region. With the advancement in surveillance, communication and navigation capabilities, providing surveillance coverage over the Bay of Bengal will enhance safety and maximise efficiency. The commitment and collaboration from the various States are necessary for successful and harmonized implementation of such enhancements to ATS routes.

1. INTRODUCTION

1.1 The Bay of Bengal Arabian Sea Indian Ocean route system comprises of near parallel RNP10 Routes which are part of the EMARSSH (Asia to Middle East/Europe Route Structure South of Himalayas) project implemented in 2002.

1.2 Since then, the air traffic movement over the Bay of Bengal area serving flights between South East Asia, South Asia, Middle East and Europe had increase significantly. For the last 15 years, there have been several air traffic management initiatives that help to ease the strain on the growing demand for the route utilization. These initiatives include, the reduction of horizontal separation with Performance Based Navigation (PBN) and datalink communication, flexible use of airspace (FUA) and air traffic flow management for flights traversing through Afghanistan. In order to cater for the future growth of traffic, there will be a need to look at further enhancements in en-route capacity to reduce delays, which will also contribute to green initiatives, e.g. reduction in fuel burn and carbon emission for flights operating in the area.

2. DISCUSSION

2.1 Prospectus Demand on the routings through Bay of Bengal increases as more airlines are opening up new schedules between South East of Asia to South Asia, Middle East and Europe vice versa. In order to ensure the safe and efficient operations for flights from South Asia and South East Asia operating into Europe, there is a need to increase the capacity to cope with the growing demand on those routings.

2.2 One of the key enablers to enhance safety and capacity is through the implementation of surveillance control services. Portions of ATS routes over the Bay of Bengal are outside the coverage of conventional surveillance, as shown in Figure 1. With the advent of Automatic Dependent Surveillance – Broadcast (ADS-B), surveillance control services can be deployed relatively easier than traditional radar systems which require careful calibration and comes at a huge cost outlay. And with surveillance data sharing, it would be a cost effective option to obtain surveillance capability over remote parts of the area.

With the realisation of surveillance coverage throughout the whole route of flight across Bay of Bengal, it will enable the use of surveillance separation instead of procedural. Therefore, increasing the capacity for the same route segment.

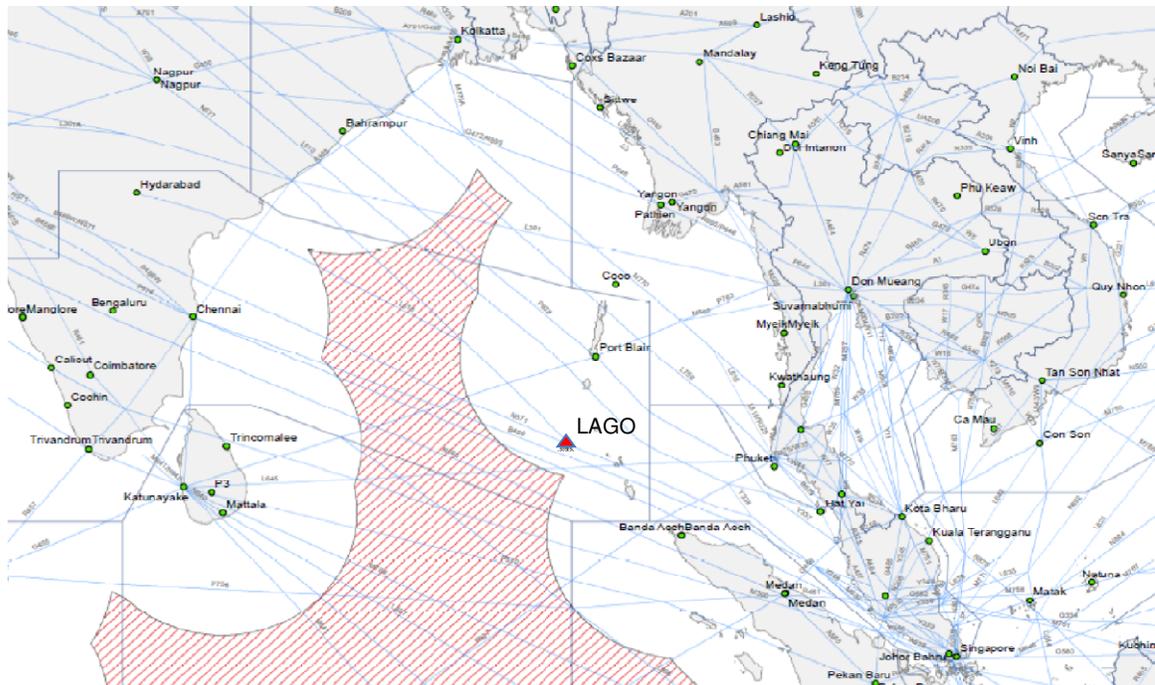


Figure 1: Bay of Bengal Surveillance

2.3 Portion of ATS routes L507 and P646 are currently not under surveillance coverage thereby requiring the application of procedural separation of 10 minutes longitudinal with the application of Mach Number Technique (MNT) for aircraft at the same flight level.

2.4 According to various papers presented at the SEA/BOB ADS-B WG/12, extension of surveillance coverage to ATS routes P646 and L507 can be achieved. Sharing of surveillance data between States will enable the entire segment of P646 and L507 to be under surveillance control, hence reducing separation minima and enhancing safety at the same time.

2.5 ATS routes N571 and P574 are two of the most utilized ATS routes over the Bay of Bengal. When adverse weather conditions affect these routes, NOTAMs would be issued for N571 and P574 to be considered as a single routing. This reduces capacity by half which leads to increased delay to flights planned on these routings and congestion on the ground in affected airports. At times, additional restrictions would be imposed for flights to be spaced up to 15 minutes apart planning to operate at the similar cruising level. The increased restrictions and delays usually affect many parties at the airport: airlines and their scheduled operations, deferred traffic leading to increase in ATC operational complexity on the ground due to snowball effect; and disruption to ground services resource planning.

2.6 Another area that surveillance separation can increase capacity is at the intersection of ATS route N571 and N877. ATS route N571 and N877 are diverging routes after waypoint LAGOG where portions of the routes are currently outside surveillance coverage. As such, procedural separation of 10 minutes longitudinal separation would have to be applied for this pair of ATS routes prior to LAGOG.

Surveillance separation can allow more flights to be assigned their optimum flight levels and eliminate the requirement to be spaced 10 minutes apart for aircraft at the same cruising level.

2.7 The current PBN requirement in the Bay of Bengal is RN10. With advancement in communication, navigation and surveillance (CNS) technologies and better aircraft equipage, airspace users may be able to comply with more stringent RNP requirements. RNP4 would be a viable improvement to RNP10 for oceanic airspace. With horizontal separation minima reduced from 50NM to 30NM, more ATS routes can be packed closer in the Bay of Bengal area which will bring about a significant boost to enroute capacity. Capacity aside, RNP4 will also bring about safety enhancement as it requires more stringent CNS requirements.

2.8 The other area is to look at further optimizing the available flight levels instead of only applying the no pre-departure coordination (NPDC) levels agreed for the routes over the Bay of Bengal. The use of available levels other than the NPDC levels, on real-time basis, will help to reduce delay and increase efficiency. This is similar to what is practiced in the South China Sea area.

2.9 Augmented by surveillance control services throughout the whole route of flight, the reduction of longitudinal and lateral separation, increase in number of ATS routes and usable flight levels will enhance safety and efficiency for ATC and flight operations. There will also be reduced fuel burn and CO2 emission as a result of airlines cruising at more optimal flight levels. It is important that States continue to work together to pursue higher level of services so as to cater to the ever increasing demand of air traffic in the Bay of Bengal area..

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) urge Consider implementation of ADS-B surveillance and data sharing between States and explore other areas of collaboration to enhance surveillance capability throughout the Bay of Bengal area;
- b) Consider developing a roadmap for the implementation of RNP4 routes, especially for high density routes over the Bay of Bengal;
- c) Discuss the feasibility of using non NPDC levels when traffic demands require it; and
- d) Discuss any relevant matters as appropriate.
