



## INTERNATIONAL CIVIL AVIATION ORGANIZATION

**TWENTY-SECOND MEETING OF THE  
ASIA/PACIFIC AIR NAVIGATION PLANNING AND  
IMPLEMENTATION REGIONAL GROUP (APANPIRG/22)**
**Bangkok, Thailand, 5-9 September 2011**
**Agenda Item 3: Performance Framework for Regional Air Navigation planning  
and implementation**
**3.2 ATM/AIS/SAR**
**IMPLEMENTATION OF PHASE 1 OF BOB- RHS 50NM**

(Presented by India)

**SUMMARY**

This paper demonstrates the commitment displayed by India in implementing 50 Nm RLS on ATS routes P628 and N571 in the Bay of Bengal, Arabian Sea and Indian Ocean and considering the tangible post implementation benefits, invites states to participate in the implementation of 50Nm RLS in the subsequent phases in the region.

**Strategic Objectives:**

- A: *Safety – Enhance global civil aviation safety*
- C: *Environmental Protection and Sustainable Development of Air Transport – Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment*

**Global Plan Initiatives:**

- GPI-5 RNAV and RNP (Performance-based navigation)
- GPI-6 Air traffic flow management
- GPI-7 Dynamic and flexible ATS route management
- GPI-8 Collaborative airspace design and management

**1. INTRODUCTION:**

1.1. The Bay of Bengal ATS Coordination Group (BBACG) in its twentieth meeting held in January 2009 decided to introduce widespread 50NM Longitudinal Separation in the Bay of Bengal, Arabian Sea and Indian Ocean Region and established the Reduced Horizontal Separation Task Force (BOB-RHS/TF) to support its implementation. The BOB-RHS Task Force in its various meetings through 2009 and 2010 decided to undertake the implementation in a phased manner.

1.2. With the introduction FANS1/A concept and the increasing number of aircraft with suitable on board equipment for RNP10 operations, BBACG was of the view that airspace capacity can be better enhanced by reducing the longitudinal separation from the present 80NM to 50NM.

## 2. DISCUSSION:

2.1 The safety assessment for implementation of 50 NM RHS was carried out by India and the lateral collision risk and the longitudinal collision risk were well below the TLS of  $5 \times 10^{-9}$  fatal accidents per flight hour. This was noted during the RASMAG/14 and RASMAG/15 Meeting and it was concluded that the safety assessment supported the continued use of 50 NM lateral separation and also the implementation of 50 NM longitudinal separation on L510, N571, P628 and P762.

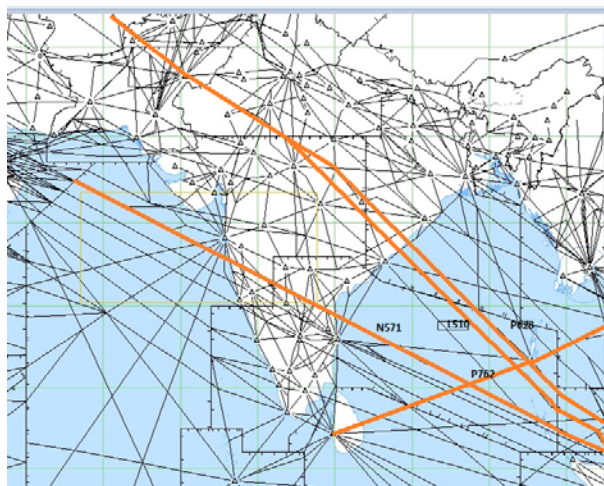
2.2 In the BOB-RHS/TF/5 the members states had given the 'Go' decision for the implementation of RHS on four RNP-10 routes of L510, N571, P628 and P762 in the first phase with effect from 30<sup>th</sup> June 2011 based on the Safety Assessments conducted by both India and Singapore and accordingly decided to notify the implementation through AIRAC date 30<sup>th</sup> June, 2011 as part of Phase 1 for four Routes, L510, N571, P628 and P762.

2.3 The lateral collision risk is estimated to be  $0.621694 \times 10^{-9}$  & the longitudinal collision risk  $0.964658 \times 10^{-9}$ , both of which are well below the TLS of  $5 \times 10^{-9}$ . Thus it was concluded RASMAG/15 that the Safety Assessment supports the introduction of 50NM RLS on L510 & P628 and continued safe use of RLS on N571 and P762. RASMAG/15 has endorsed India EMA (BOBASMA) as a competent Airspace safety Monitoring Agency for Bay of Bengal, Arabian Sea and Indian Ocean. The States are requested to forward the GNE, PBN/data link approval and TSD data regularly to BOBASMA and those states who have not signed the LOA are requested to sign and forward to BOBASMA.

2.4 Qualitative Safety Assessment was carried out by all Area Control Centres for phase 1 implementation of reduced longitudinal separation.

2.5 Controllers' training for RHS was completed for implementation of 50 NM RHS. Air Traffic Controllers from four ACCs have visited Singapore to get themselves familiarized with the applications of 50NM RHS. The support extended by CAAS, Singapore is highly appreciated.

2.6 Although Malaysia informed that 50 NM RLS in Kuala Lumpur FIR will be implemented only after the ADS/CPDLC issues are resolved, India had implemented 50 NM RLS on P762 (bi-directional) and N571 (Eastbound between PARAR and IDASO, Westbound between IGOGU and PARAR), P628 (Westbound between IGREX and VIKIT) in the phase 1. The ATS route L510 will be considered in Phase 2 after the ADS/CPDLS is operational in Kuala Lumpur FIR. A G series NOTAM was taken to amend the AIP supplement 21/2011.



**3. POST- IMPLEMENTATION ANALYSIS**

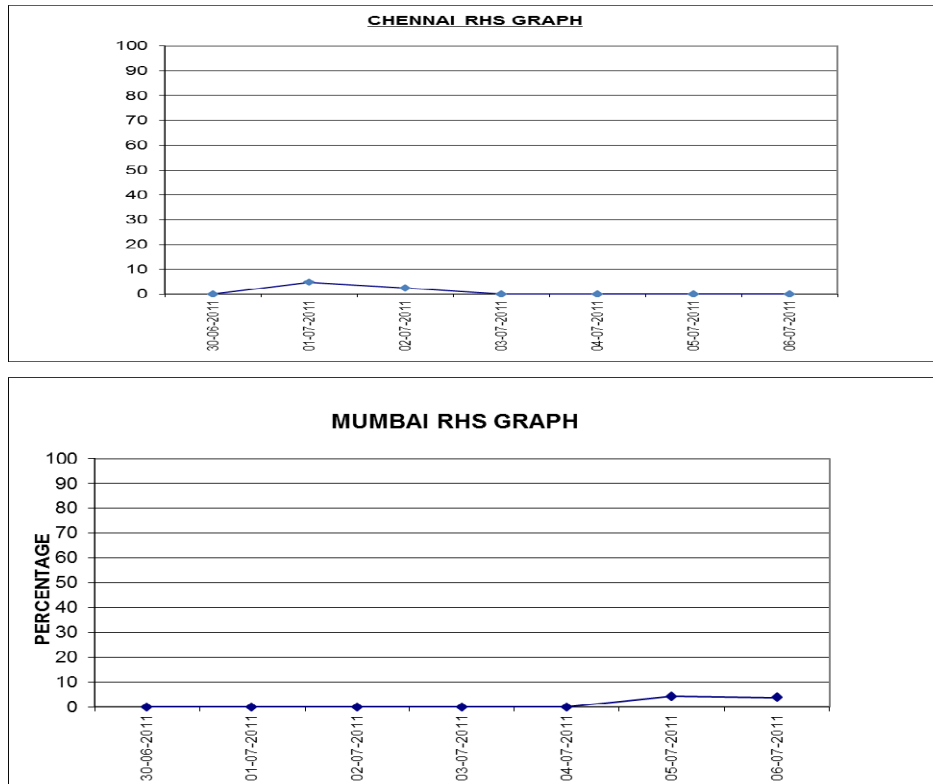
**PRE- IMPLEMENTATION SCENARIO:**

The TSD of April 2011 for Chennai FIR was used to perform a Business case study for the implementation of RLS on route N571. FL280 & FL300 were taken as base levels for westbound flights and FL 290 & FL310 as base levels for eastbound flights. The present longitudinal separation minimum on N571 is 10 minutes or 80NM. It was found that at least in 37 cases where the aircraft maintaining FL 280, 290, 300 & 310 were less than 10 minutes but more than 7 minutes longitudinally separated from the other aircraft at higher levels of FL 320, 330, 340 and 350. Based on controller inputs it is presumed that at least 80% of requests for higher levels are denied because of traffic at the requested levels within 10 minutes or 80NM. Thus at least 37 of the level requests could have been approved if 50NM longitudinal is implemented.

**4. POST- IMPLEMENTATION SCENARIO**

**Application of Reduced Horizontal Separation on N571 & P762**

50NM Reduced longitudinal separation was introduced on two routes N571 & P762 from 30th June 2011 in Chennai and Mumbai FIRs. Data on the use of 50NM distance based separation were collected for a week from 30th June to 6th July 2011 and examined. Figure 29 shows the percentage of aircraft operations using reduced longitudinal separation (50NM) observed in Chennai FIR during the period 30th June to 6th July 2011.



While comparing the pre-implementation with post implementation scenario we could comprehend the following. The participation of Malaysia in the east and Pakistan in the west could have accommodated more no of 50NM RLS aircraft pairs.

- Inability to find suitable aircraft pair for attempting 50NM RLS was evident when only one aircraft was having DCPC out of the two;
- Though the levels were available to accommodate aircraft pair with 50NM RLS, the climb could not be approved by ATC due to reciprocal traffic over oceanic airspace during peak hour traffic;
- Dispatching aircraft from the originating ACC, in such a way that the aircraft pair with DCPC capability will have the opportunity to participate and continue with 50NM RLS while transitioning through onward controlling centers (ACC); and
- Number of aircraft pairs permitting 50RLS would significantly increase after the controllers tide over obvious inertia for attempting reduction in separation and attain the required levels of confidence in the near future.

The fuel savings of 820000 litres in a year for a single route would result in reduction of greenhouse gas emissions to the tune of **2 million kg of CO<sub>2</sub>, 533 Kg of SO<sub>x</sub> and 410Kg of NO<sub>x</sub>**. The environmental benefit will further increase manifold when 50NM RLS is implemented on all RNP-10 routes over Bay of Bengal, Arabian Sea and Indian Ocean.

## 5. ACTION BY THE MEETING

The meeting is invited to

- a) note India's commitment in implementing 50 NM RLS in Bay of Bengal, Arabian Sea and Indian Ocean in the first phase;
- b) Participate in the implementation of 50 Nm RLS in the subsequent phases;
- c) Urge airlines to consider equipping airframes with ADS/CPDLC for deriving maximum benefits; and
- d) advice member states to
  - sign the Letter of Agreement and submit it to BOBASMA;
  - forward the PBN & data-link approvals data as per Appendix – C of EMA Handbook; and
  - forward the GNE data for the timely submission of Safety Assessment to RASMAG by BOBASMA.