



*International Civil Aviation Organization*

**Third Meeting of the Bay of Bengal Reduced Horizontal Separation  
Implementation Task Force (BOB-RHS/TF/3)**

Singapore, 18 – 21 May 2010

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**Agenda Item 6: Future Direction and Arrangements**

**UNI-DIRECTIONAL ROUTES OVER BAY OF BENGAL AND ARABIAN SEA**

(Presented by the Secretariat)

**SUMMARY**

The purpose of this working paper is to discuss the concept of unidirectional routes across the Bay of Bengal and the Arabian Sea from a safety issue as well as an operational benefit point of view.

**1. INTRODUCTION**

1.1 Over the past years, air traffic has continued to grow in the Bay of Bengal and Arabian Sea areas, necessitating ongoing solutions to manage this expansion of air traffic.

1.2 The meeting would recall that, due to an upsurge of traffic between Southeast/Southern Asia and Europe, especially during the westerly peak period at night, as well as substantial growth by flights operating between Southeast/Southern Asia and the Middle East, changes in ATM procedures have been introduced to cope with this increase of aircraft. Two larger projects were successfully implemented in the EMARSSH route structure and the introduction of RVSM in the Asia and Pacific regions as well as the Middle East region.

1.3 Another more recent example was when the ATFM/BOBCAT procedures were introduced on an operational trial basis in 2006. The number of aircraft using the system during the four hour period transiting the Kabul FIR then averaged 37 movements per night. That figure has increased over the past 4 years to averaging 62 movements during the same 4 hour period; a percentage increase of over 80%.

**2. DISCUSSION**

Terms of Reference of the Task Force

2.1 The meeting is reminded that the Terms of Reference for the Bay of Bengal Reduced Horizontal Separation Task Force (BOB-RHS/TF) has also been tasked to look at other features within the scope of the area under consideration. Under paragraph i) of the TORs, it is stated that the task force should “Explore possibilities for further enhancement to operational efficiency of routes through configuration and/or enhanced surveillance”.

2.2 In this context, whilst taking into consideration the major thrust in reducing the longitudinal separation to 50 NM on present RNAV routes in the area, other initiatives should also be explored that would enhance operational efficiency and safety of aircraft to the benefit of the users and providers of the ATS service alike.

#### Unidirectional Routes already established within the APAC region

2.3 The meeting may recall that in other areas of this region unidirectional routes have been established. For example, in the South China Sea (SCS), 6 RNAV unidirectional routes have been operational for some years. They are:

<b>Route designator</b>	<b>Direction</b>
L642	Southwest
M771	Northeast
N892	Southwest
L625	Northeast
N884	Northeast
M767	Southwest

2.4 Each RNAV route mentioned above now use unidirectional procedures for managing aircraft. Aircraft on designated southwest routes may choose any level, except levels reserved for crossing aircraft. Similarly, aircraft operating on designated northeast routes may choose any level except levels reserved for crossing aircraft. In summary, aircraft operating on the designated routes described in the Table above, which have a minimum of 60 NM lateral spacing, have the opportunity of using even or odd flight levels in either direction. This ability of a wider range of levels gives more flexibility and efficiency to their operations.

#### Proposed procedures for aircraft crossing the major traffic flow in the SCS

2.5 The meeting is also informed that, in regard to the crossing routes, which have less traffic than the north/south flow, the South East Asia Route Review Task Force (SEA-RR/TF) is presently looking at a single crossing route being divided into a pair, appropriately spaced by not less than RNAV RNP 10 requirements to allow aircraft to use the same level in either direction crossing the major traffic flow. This would increase level usage on these routes and at the same time, may allow some of these levels to be used for the busier major traffic flow.

2.6 Once aircraft are within radar coverage on the crossing routes, the distance between these two routes is decreased so that they would eventually come together as one route using normal ATC procedures regarding flight level allocation and separation requirements.

#### Use of Unidirectional Routes in the Bay of Bengal and Arabian Sea

2.7 It is suggested to the meeting that there may be an opportunity for this type of procedure to be considered for RNAV routes crossing the Bay of Bengal and the Arabian Sea. It should be noted that P628 is classified in the Jeppesen Charts as a westbound route across the Bay of Bengal and similarly, L510 eastbound. However aircraft operating on these routes are not afforded the use of all flight levels.

2.8 A procedure similar to the SCS example would also take into consideration the crossing aircraft, as well as allowing a flexible and more efficient use of the present airspace for the majority of aircraft operating on the major East/West/Northwest traffic flows.

2.9 In considering whether there is merit in pursuing this topic further, there are some additional factors which should be taken into account. Amongst these are:

- a) Whether any proposed changes should be looked at on a route by route case or all together;
- b) Changes to the longitudinal and vertical elements of any present ATM procedure, especially with regard to aircraft involved in the ATFM/BOBCAT system through Kabul FIR; and
- c) Agreement with all States concerned.

### **3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the successful work achieved in the South China Sea area concerning unidirectional routes and the benefits derived in efficiencies to the overall airspace;
- b) discuss the proposal in specific or general terms to see whether a similar set of procedures could be implemented in the Bay of Bengal and Arabian Sea; and
- c) discuss the timing of this initiative as to whether to harmonize with the BOB-RHS work or look at this as an individually project.

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