



*International Civil Aviation Organization*

**The Twenty-First Meeting of the Regional Airspace Safety Monitoring  
Advisory Group (RASMAG/21)**

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**Agenda Item 5: Airspace Safety Monitoring Activities/Requirements in the Asia/Pacific Region**

**THE REQUIREMENT FOR A BOBASIO RMA**

(Presented by BOBASMA/India)

**SUMMARY**

This paper presents the contribution of BOBASMA in RVSM System Performance Monitoring within the Bay of Bengal Arabian Sea Indian Ocean (BOBASIO) airspace and the support extended by BOBASMA to MAAR in identifying the Safety Risk in the BOBASIO RVSM airspace. The Paper also presents the requirement of an exclusive RMA for the BOBASIO sub-region.

**1. INTRODUCTION**

1.1 The Bay of Bengal Arabian Sea Indian Ocean Safety Monitoring Agency (BOBASMA) was established by India at Chennai and endorsed as an En-Route Monitoring Agency(EMA) by APANPIRG vide APANPIRG Decision 22/14 in 2012.

1.2 Since its establishment in January 2011 BOBASMA has been successful in raising the awareness of controllers with regard to reporting of safety issues, as can be seen from the increased instances of reporting of aircraft deviations in the region in the recent past.

**2. DISCUSSION**

2.1 Reduced Vertical Separation (RVSM) was introduced in the Bay of Bengal Arabian Sea Indian Ocean (BOBASIO) airspace on 27<sup>th</sup> November 2003. The Monitoring Agency for the Asia Region (MAAR) operated by AEROTHAI of Thailand took over the responsibility, to provide RMA services for the Asia Region, from APARMO on 2<sup>nd</sup> September 2003.

2.2 **Table 1** is a summary of the Asia-Pacific RMAs showing the number of States and FIRs for which they provide RMA services along with the estimated annual flying hours for the airspace analyzed by them.

S. No	Regional Monitoring Agency	Member States	FIRs	Estimated Annual Flying Hours
1	Monitoring Agency for Asia Region (MAAR)	20	25	3,731,421 (RASMAG 20)
2	China Regional Monitoring Agency (China-RMA)	2	10	2,129,702 (RASMAG 20)
3	Pacific Approvals Registry and Monitoring Organization (PARMO)	6	7	2,162,018 (RASMAG 20)
4	Australian Airspace Monitoring Agency (AAMA)	6	7	1,556,840 (RASMAG 20)
5	Japanese Airspace Safety Monitoring Agency (JASMA)	1	1	1,276,693 (RASMAG 20)

Table 1: Summary of Asia-Pacific RMAs and Estimated annual Flying Hours

**Table 2** shows the distribution of the estimated annual flying hours within the area of responsibility of MAAR.

S. No	Airspace	Estimated Annual Flying Hours
1	WPAC + SCS + Mongolian RVSM airspace	1,620,612 (RASMAG 20)
2	Bay of Bengal RVSM airspace	2,110,809 (RASMAG 20)

Table 2: Distribution of Estimated annual flying hours within MAAR airspace.

2.3 In the first ten years following the implementation of RVSM in the BOBASIO airspace the safety risks in the airspace couldn't be identified readily and therefore year after year the RVSM Risk estimates were shown to be well below the established Target Level of Safety (TLS). Table 3 below shows the results of the Safety oversight for RVSM operations in the BOBASIO airspace.

RASMAG	Technical Risk	Operational Risk	Total Risk
	$2.5 \times 10^{-9}$		$5.0 \times 10^{-9}$
RASMAG 1 Apr' 04	$1.83 \times 10^{-9}$	$1.58 \times 10^{-9}$	$3.41 \times 10^{-9}$
RASMAG 2 Oct'04	$0.55 \times 10^{-9}$	$1.43 \times 10^{-9}$	$1.99 \times 10^{-9}$
RASMAG 3Jun'03	$0.61 \times 10^{-9}$	$2.56 \times 10^{-9}$	$3.18 \times 10^{-9}$
RASMAG 5 Jun'06	$0.77 \times 10^{-9}$	$1.11 \times 10^{-9}$	$1.88 \times 10^{-9}$
RASMAG 6 Nov'06	$0.77 \times 10^{-9}$	$1.11 \times 10^{-9}$	$1.88 \times 10^{-9}$
RASMAG 7 Jun'07	$0.79 \times 10^{-9}$	$0.27 \times 10^{-9}$	$1.06 \times 10^{-9}$
RASMAG 8 Dec'07	$0.79 \times 10^{-9}$	$0.19 \times 10^{-9}$	$0.98 \times 10^{-9}$
RASMAG 9 May'08	$0.82 \times 10^{-9}$	$0.83 \times 10^{-9}$	$1.654 \times 10^{-9}$

RASMAG 10 Dec'08	0.84 X 10 <sup>-9</sup>	2.40 X 10 <sup>-9</sup>	3.24 X 10 <sup>-9</sup>
RASMAG 12 Dec'09	0.61 x 10 <sup>-9</sup>	0.52 x 10 <sup>-9</sup>	1.13 x 10 <sup>-9</sup>
RASMAG 13Aug'10	0.74 x 10 <sup>-9</sup>	0.56 x 10 <sup>-9</sup>	1.3 x 10 <sup>-9</sup>
RASMAG 14Feb'11	0.51 x 10 <sup>-9</sup>	1.08 x 10 <sup>-9</sup>	1.59 x 10 <sup>-9</sup>
RASMAG 15Aug'11	0.54 x 10 <sup>-9</sup>	2.81 x 10 <sup>-9</sup>	3.06 x 10 <sup>-9</sup>
RASMAG 16Feb'12	0.54 x 10 <sup>-9</sup>	0.62 x 10 <sup>-9</sup>	1.16 x 10 <sup>-9</sup>
RASMAG 17Aug'12	0.55 x 10 <sup>-9</sup>	1.04 x 10 <sup>-9</sup>	1.59 x 10 <sup>-9</sup>
RASMAG 18Apr'13	0.42 x 10 <sup>-9</sup>	1.54 x 10 <sup>-9</sup>	1.96 x 10 <sup>-9</sup>
RASMAG 19May'14	0.65 x 10 <sup>-9</sup>	12.82 x 10 <sup>-9</sup>	13.47 x 10 <sup>-9</sup>
RASMAG 20May'15	0.95 x 10 <sup>-9</sup>	17.78 x 10 <sup>-9</sup>	18.73 x 10 <sup>-9</sup>

Table 3: RVSM Risk Estimates for BOBASIO Airspace.

2.4 Recognizing the urgent need for identifying the Safety Risks in the continued use of RVSM within the BOBASIO airspace Airports Authority of India in 2013, entrusted the additional responsibility of RVSM System Performance Monitoring within the four Indian FIRs to BOBASMA.

2.5 BOBASMA was made responsible for sensitizing the Indian controllers and increasing the awareness among the ATC community on the significance of identifying and reporting of Operational errors resulting in Large aircraft deviations such as LHD, LLD & LLE. BOBASMA was made the Nodal agency for the collection of LHDs, from all the eleven Indian ACC/OCCs, which would then be forwarded to the RMA, MAAR.

2.6 The efforts taken by BOBASMA had resulted in identifying, the so far hidden, Safety Risks in the airspace. The LHD hotspots in the interface between different FIRs, wherein a large number of Category-E LHDs have been reported, have now been identified. It can be seen from Table 3 that during the twelve years since the implementation of RVSM, Operational Risk has had a major impact on the Total Risk compared to Technical Risk. BOBASMA's work had led to an increased reporting rate of Category – E LHDs which has contributed to the increase in the Operational Risk and ultimately the Total Risk. It is further seen from the analysis presented by MAAR in the recently concluded BOBASIO/5 and MAWG/3 meeting that this trend of increasing Operational risk is continuing unabated, which requires early redressal of the underlying causes.

2.7 The fact that Operational Risk plays a major role in the final outcome of any safety oversight of RVSM operations is a clear indication that more effort needs to be focused on reducing Operational errors. Table 3 is also indicative of the fact that identifying and reporting of operational errors is a much more difficult task than envisaged earlier. This could be achieved in the BOBASIO airspace only after the establishment and active support of BOBASMA.

2.8 As a beginning, based on the identification of the LHD hotspots in the BOBASIO airspace since 2012, APANPIRG 24 in 2013 adopted **APANPIRG Conclusion 24/27: Prioritization of AIDC Implementation to Address LHDs which** urged states to expedite the implementation of AIDC between Chennai-Kuala Lumpur and Chennai-Jakarta.

2.9 BOBASIO airspace and more particularly the Indian airspace lies in the boundary between three ICAO regions of Asia-Pacific (APAC), Eastern and Southern African (ESAF) and Middle East (MID). The Western Indian FIR of Mumbai interfaces with the FIRs of Muscat, Sanaa, Mogadishu, Seychelles and Murus FIRs. Identifying LHD hotspots in the boundary between Mumbai FIR and any

of these adjoining FIRs and initiating remedial actions requires coordinated effort across ICAO regions.

2.10 MAAR recognizing the important role being played by BOBASIO, which comprises of member states from the three ICAO regions, had during the 5th ATS Coordination meeting of BOBASIO states (BOBASIO/5) in September 2015 proposed that BOBASIO take on the task of acting as the scrutiny group to address the hot spots in the BOBASIO region.

2.11 The ever increasing growth of air traffic within the BOBASIO airspace and the planned implementation of Regional PBN initiatives require a more focused approach to address the inherent Safety Risks in the airspace. During BOBASIO/5 meeting, based on the proposal of MAAR and India's willingness to establish an RMA, the meeting adopted Decision **BOBASIO/5-05 - Regional Monitoring Agency for BOBASIO Airspace**, directing BOBASMA to present a working Paper in RASMAG/21, conveying the decision of BOBASIO/5 to RASMAG, of asking BOBASMA to provide RMA services to the member States of BOBASMA in addition to EMA services.

2.12 In view of the stated need of an exclusive RMA for the BOBASIO airspace by the member states of BOBASIO due to the alarming increase in the Operational Risk, RASMAG should seriously reconsider its earlier stance of not accepting of any more RMAs and accept India's proposal for the establishment of a RMA by BOBASMA. India also being the lead state in the region, which has previously organized informal coordination meeting of member states from the three ICAO Regions under the umbrella organisation of BOBASIO, will be in a better position to undertake the responsibility of addressing the Safety risks in the airspace.

### 3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the work done by BOBASMA; and
- b) consider India's proposal for the establishment of an RMA
- c) discuss any relevant matter as appropriate.

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