



International Civil Aviation Organization

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

Singapore, 18 – 21 May 2010

Agenda Item 5: Post-Implementation Management Considerations

**ENROUTE MONITORING AGENCY TO SUPPORT
REDUCTION OF HORIZONTAL SEPARATION**

(Presented by Singapore)

SUMMARY

This paper aims to provide a general background of the functions of an En-route Monitoring Agency (EMA) and its duties and responsibilities in supporting the introduction and continued safe use of en-route horizontal-plane separation minima.

Action by BOB-RHS/TF/3 is at Paragraph 3.

1. INTRODUCTION

1.1 ICAO Annex 11 provisions require that safety assessments be carried out based on collision risk modelling before the implementation of reduced separation minima such as the 50 NM longitudinal separation based on RNP10 operations. This is to ensure that the regionally established target level of safety (TLS) for the airspace in question has been met. Additionally, periodic safety reviews must be performed in order to permit continued safe operations.

1.2 In 2004, the Regional Airspace Safety Monitoring Advisory Group (RASMAG) of APANPIRG recognized the need for such safety monitoring activities to be carried out to support improvements to air traffic management for the region in a safe and systematic manner. Safety Monitoring Agency (SMA) was then adopted to identify the organization(s) that would be providing airspace safety assessment and monitoring services. In 2009, APANPIRG adopted the change in name from SMA to En-route Monitoring Agency (EMA) to better reflect the duties and responsibility of the EMA.

2. DISCUSSION

2.1 An EMA is an organization providing international airspace safety assessment, monitoring and implementation services to support the introduction and continued safe use of en-route horizontal-plane separation minima. It comprises a group of specialists who carry out specific functions to provide these services. The services provided by an EMA are to support the States towards implementation and continued safe use of reduced separation minima. The responsibility of safe implementation and continued operations rest with States, ANSPs and users.

Duties and responsibilities of EMA

2.2 Apart from the EMA's function of carrying out the safety assessment and periodic safety reviews to support implementation of reduced horizontal separation, the other duties and responsibilities can be broadly categories as, information management, analysis and communications with the various stakeholders.

2.3 The duties and responsibilities of an EMA are:

- a. to establish and maintain a database of operational approvals specific to the horizontal-plane separation applied in the EMA's area of responsibility;
- b. to coordinate monitoring of horizontal-plane navigational performance and the identification of large horizontal-plane deviations;
- c. to receive reports of large horizontal-plane deviations identified during monitoring; to take the necessary action with the relevant State authority and operator to determine the likely cause of the horizontal-plane deviation and to verify the approval status of the relevant operator;
- d. to analyze data to detect horizontal-plane deviation trends and, hence, to take action as in the previous item;
- e. to undertake data collections as required by RASMAG to:
 1. investigate the navigational performance of the aircraft in the core of the distribution of lateral deviations;
 2. establish or add to a database on the lateral navigational performance of:
 - the aircraft population
 - aircraft types or categories
 - individual airframes;
 3. examine the forecast accuracy of aircraft-provided times at future (i.e next position) required reporting points
- f. to archive results of navigational performance monitoring and to conduct periodic risk assessments in light of agreed regional safety goals;
- g. to contribute to a regional database of monitoring results;
- h. to initiate necessary remedial actions and coordinate with specialist groups as necessary in the light of monitoring results;
- i. to monitor the level of risk as a consequence of operational errors and inflight contingencies as follows:
 1. determine, wherever possible, the root cause of each horizontal plane deviation together with its size and duration;
 2. calculate the frequency of occurrence;

3. assess the overall risk in the system against the overall safety objectives;
And
 4. initiate remedial action as required;
- j. to initiate checks of the approval status of aircraft operating in the relevant airspace where horizontal-plane separation is applied, identify non-approved operators and aircraft using the airspace and notify the appropriate State of Registry/State of the Operator accordingly; and
- k. to submit reports as required to APANPIRG through RASMAG.

Safety Assessment

2.4 One of the fundamental principles for the conduct of the safety assessment is to determine the core navigational performance of the flights that operates in the area. This can be achieved through the cooperation between States and ANSPs to monitor aircraft navigational performance and report any navigational errors. With this information, the probability of an occurrence of a lateral overlap of two aircrafts can be determined.

2.5 Navigation errors can be classified into 2 categories as follows;

- a. Large lateral deviation (LLD)
Any deviation of 15 NM or more to the left or right of the current flight-plan track;
- b. Large longitudinal error (LLE)
Any unexpected change in longitudinal separation between an aircraft pair, or for an individual aircraft the difference between an estimate for a given fix and the actual time of arrival over that fix, as applicable, in accordance with the criteria set out below:

Category of Error	Criterion for Reporting
Aircraft-pair (Time-based separation applied)	Infringement of longitudinal separation standard based on routine position reports
Aircraft-pair (Time-based separation applied)	Expected time between two aircraft varies by 3 minutes or more based on routine position reports
Individual-aircraft (Time-based separation applied)	Pilot estimate varies by 3 minutes or more from that advised in a routine position report
Aircraft-pair (Distance-based separation applied)	Infringement of longitudinal separation standard, based on ADS, radar measurement or special request for RNAV position report
Aircraft-pair (Distance-based separation applied)	Expected distance between an aircraft pair varies by 10NM or more, even if separation standard is not infringed, based on ADS, radar measurement or special request for RNAV position report

2.6 The LLDs and LLEs reports would have a significant influence on the outcome of safety assessment. A programme to collect this information, assess the occurrences and initiate remedial action to correct systemic problems should be established as appropriate. This could be achieved by means of a Letter of Agreement between the States involved.

2.7 The collection of Traffic Sample Data (TSD) is a necessary component towards providing the parameters for the collision risk modeling. The provision of annual TSD serves to provide not only the EMAs but also the RVSM Monitoring Agencies (RMAs) in conducting the safety reviews for RVSM operations.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the need to carry out safety assessments and monitoring activities to support implementation of reduced separation minima.
- b) Note the functions, roles and responsibilities of the EMA.
- c) Note the need for States to provide appropriate data and information to support the functions of the EMA.

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