



International Civil Aviation Organization

**The Twenty-First Meeting of the APANPIRG ATM/AIS/SAR Sub-Group
(ATM/AIS/SAR/SG/21)**

Bangkok, Thailand, 27 June – 01 July 2011

Agenda Item 5: Review of other relevant meetings

**THE FIFTH MEETING OF THE BAY OF BENGAL REDUCED HORIZONTAL
SEPARATION IMPLEMENTATION TASK FORCE (BOB-RHS/TF/5)**

(Presented by the Secretariat)

SUMMARY

This paper provides an overview of the Fifth Meeting of the Bay of Bengal Reduced Horizontal Separation Implementation Task Force (BOB-RHS/TF/5), especially in relation to Phase One of the Project.

The paper also provides ongoing progress since this meeting on Phase 1 of the Project leading up to the Implementation of Phase 1 on 30 June 2011

This paper relates to –

Strategic Objectives:

- A: *Safety – Enhance global civil aviation safety*
- B: *Security – Enhance global civil aviation security*
- 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-1 Flexible use of airspace
- 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
- GPI-12 Functional integration of ground systems with airborne systems
- GPI-17 Data link applications

1. INTRODUCTION

1.1 The Thirteenth Meeting of the FANS Implementation Team for the Bay of Bengal (FIT-BOB/13) and the Fifth Meeting of the Bay of Bengal Reduced Horizontal Separation Implementation Task Force (BOB-RHS/TF/5) were held consecutively at the Kotaite Wing, ICAO Asia and Pacific Regional Office, Bangkok, Thailand, from 07 to 11 February 2011.

2. DISCUSSION

2.1 The objectives of the Terms of Reference for the BOB-RHS Task Force focused in part on the development and implementation of strategic, benefits-driven plans to improve en-route airspace efficiency. This was expected to be achieved by means of the implementation of reduced horizontal separation (lateral and longitudinal) based on the ICAO RNAV 10 (RNP 10) and RNP 4 PBN navigation specifications. A decision was made to recommend changes to the BBACG (Bay of Bengal ATM Coordination Group) so as to widen the scope of the Task Force regarding the area to be covered to be consistent with the Major Traffic Flow AR4 (Southeast Asia to Europe, South of the Himalayas and the Middle East).

2.2 So as to continue the benefits expected within the Bay of Bengal area, it was agreed the ATS routes through Afghanistan and the Arabian Sea also required attention. As a result of these discussions, the Major Traffic Flow AR4 was used as a benchmark for the work to be achieved.

2.3 It was agreed by previous task force meetings that phase 1 of the project would concentrate on implementation of 50NM longitudinal separation on 4 routes namely, L510, N571, P628 and P762. This meeting was treated as a Go/No Go meeting for Phase 1.

Malaysia

2.4 Malaysia advised that the Automatic Dependent Surveillance/Controller-Pilot Datalink Communications (ADS/CPDLC) system had undergone software updates and a trial of the new equipment was successful, with the data analysis indicating that the system was in compliance with the FANS 1/A ADS/CPDLC Global Operational Datalink Document (GOLD).

2.5 All training requirements were expected to be completed by 29 October 2010. Once completed, a Reduced Horizontal Separation (50/50NM) training course will be undertaken with the target date for completion of 31 January 2011.

Myanmar

2.6 Myanmar had a CNS/ATM stand-alone workstation which was capable of enhanced ATM services. A successful trial was conducted by Boeing in coordination with Chennai ACC. Myanmar had been included in Phase One of the BOB-RHS for aircraft operating through Yangon FIR on P762.

2.7 With regard to Phase Two of the project, Myanmar had commenced a course of action to integrate an ADS-C/CPDLC system into their new ACC displays. This will allow the oceanic area of the Yangon FIR to operate a datalink environment where it was necessary to do so. The timeline for implementation is in the second half of 2011.

Afghanistan

2.8 Afghanistan advised that the current communications system, including VHF coverage throughout the Kabul FIR complied with the requirement for Direct Controller-Pilot Communications (DCPC). Furthermore, there were ongoing efforts to develop a more robust system of communications by installing additional Very Small Aperture Terminal (VSAT) communications capabilities. There were also positive efforts to install a multi-lateration (MLAT) surveillance system to cover the Kabul FIR, which was targeted for operational readiness in the period 2012/2013.

2.9 Afghanistan advised that they were ready to initiate reduced longitudinal separation in concert with other States to 50NM along the major traffic flow through Afghanistan airspace, in accordance with the agreed time lines of Phase One and Two.

2.10 Afghanistan further stated that they had completed the required safety assessment and were ready to initiate the Reduced Longitudinal Separation to 50NM in a staged approach agreed by the meeting.

ATFM/BOBCAT Operations based on 50 NM Longitudinal Spacing

2.11 With the proposed implementation of 50NM spacing across the Bay of Bengal as well as through the Kabul FIR on the major transiting routes, the present spacing used by the BOBCAT system would be adjusted in a phased approach to improve efficiencies to the users.

2.12 Three specific routes L333, G792 (P628) and B466 (N636) crossing the Kabul FIR would be taken into account during Phase One. In addition, for uniformity, aircraft using these three routes in an eastbound direction would have the advantage of 50NM longitudinally spacing.

Coordination arrangements with other States bordering the APAC Region

2.13 Coordination was being processed with other States bordering Kabul FIR such as the I.R. of Iran to the West and eventually other involved States to the North when planning to introduce 50NM longitudinal spacing in this area. It was expected that there should be little difficulty in the change due to longstanding radar capabilities by these States concerned.

2.14 Pakistan had been requested to monitor 50NM separation on route segments N636 SERKA – PAROD and converging route P628 from ASLUM within Kabul FIR. They were presently assisting Kabul ACC with this task at 80NM spacing. The singular waypoint PAROD is currently being used by the BOBAT system in the strategic planning for aircraft spacing.

2.15 Since the BOB-RHS/TF/5 meeting, Pakistan had indicated that they were unable to provide this service within Kabul FIR airspace. Other arrangements would now need to be formulated.

Route Enhancements

2.16 For long and ultra-long haul aircraft departing out of Delhi (e.g. VIDP-KEWR) on M875, it can be difficult for aircraft to reach the MEA of FL280 (FL290 in Lahore FIR) prior to crossing the FIR boundary between Delhi/Lahore. Both India and Pakistan confirmed that their Letter of Agreement (LOA) did not preclude individual coordination being undertaken for these flights leaving or entering the respective FIRs. IATA would advise the airlines that early notification that they would still be climbing at the FIR boundary was necessary.

2.17 It was noted that there were limitations in the hours of availability of M875 within the Indian FIRs with the route only being available until 2230 UTC. India undertook to assess whether an extension in timing was possible. They advised that they would coordinate with the appropriate military authorities on this issue.

2.18 A route between SAMAR-LAJAK has been under consideration for some time and would provide a much needed link with L509 to the East mainly for aircraft operating to/from Bangkok. This route has now been implemented during BOBCAT hours only, limited to flight levels at or above FL300.

2.19 It was noted that the availability of a direct route between PRA-SERKA would make a viable alternative for traffic operating to/from Europe. As an alternative proposal, it may be possible to realignment N877 from NNP to TASOP and then a direct route TASOP – SERKA. India and Pakistan agreed to coordinate this proposed route enhancement. This proposal was still under consideration by India and Pakistan.

Proposed Implementation of RVSM in Russia and other Central Asian States

2.20 The Russian Federation, along with other present non-RVSM States adjoining or close to Russian airspace, would change to RVSM levels in accordance with agreed ICAO RVSM procedures and flight levels, Annex 2, Appendix 3A on AIRAC Date 17 November 2011 refers. This initiative also includes Afghanistan.

2.21 During this planning process, a safety study by the States concerned would be conducted. In regards to Afghanistan, this safety study was expected to also take into account current military operations.

2.22 Once implemented, the offer of additional flight levels transiting the Kabul FIR, together with the proposed introduction of RNAV 10 50NM longitudinal separation on the major routes through this airspace, would enhance operational efficiency to both providers and users alike and just as importantly, ease the extensive workload caused by flight level transitions on Pakistan and other service providers adjoining the Kabul FIR.

Safety Analysis and Airspace Monitoring Issues

Bay of Bengal Arabian Sea Monitoring Agency (BOBASMA)

2.23 This Agency had not as yet been endorsed by RASMAG as an EMA (En-route Monitoring Agency). However, India was currently undertaking traffic sampling tasks as part of the pre-approval process and the 13th Meeting of RASMAG were very encouraged by India's progress and developing expertise in this field.

ATS interoperability tests by Boeing

2.24 Boeing had assisted India by conducting Bench-testing of ADS-C/CPDLC equipage with Chennai and Mumbai ATC Centres to identify ADS-C/CPDLC ground system issues. A further test was conducted between Kuala Lumpur ATC and Chennai ATC.

2.25 It was also noted that in early December 2010, Boeing and ICAO were invited to visit Myanmar for bench-test on the Yangon ACC standalone CNS/ATM workstation as well as to assist in the training of air traffic control in datalink procedures.

Update on ADS-C/CPDLC capability in Colombo ACC

2.26 Sri Lanka provided details of their CNS/ATM Workstation used where necessary on P762. Sri Lanka were also doing trials with airlines and their adjacent ACCs as well as using the services of Boeing, to validate the accuracy of the system.

Assessment of the Safety of continued use of 50NM Lateral and the Implementation of 50NM Longitudinal Separation Standards on ATS Routes P628, L510, N571 and P762

2.27 Singapore through their safety monitoring agency SEASMA (Southeast Asia Safety Monitoring Agency), had been generously giving assistance to BOBASMA in the conduct of the Safety Assessment. SEASMA presented the results of an assessment of the risk associated with the continued safe use of 50NM lateral and the introduction of 50NM longitudinal separation standards on Bay of Bengal routes L510, N571, P628 and P762.

2.28 The safety assessment was conducted using internationally applied ICAO collision risk methodology, making use of relevant results developed in other portions of the Asia and Pacific Region where appropriate.

2.29 The ATS routes affected for Phase One and Two were considered in the conduct of the lateral safety assessment. The risk associated with the 50NM lateral separation standard was estimated to be in compliance with the Regional Target Level of Safety (TLS). APANPIRG has adopted the value of 5×10^{-9} fatal accidents per flight hour as the Asia Region TLS for each separation dimension. The longitudinal collision risk was estimated to be 3.80×10^{-10} which did not exceed the TLS.

2.30 In light of favorable risk estimates and the ongoing program for monitoring navigational performance, the safety assessment supported the continued use of 50NM lateral and the introduction of 50NM longitudinal separation standards on L510, N571, P628 and P762.

Conclusions and Recommendations from the Safety Assessment for Phase One

2.31 Both the estimates of lateral and longitudinal risk showed compliance with the corresponding TLS values during the months of the monitoring period. Since the assessment for the lateral TLS used traffic counts and LLDs reported for all twelve routes, it was concluded that a 50NM lateral separation between any of the two routes would satisfy the lateral TLS.

2.31 The meeting noted that the provision of data by States was critical to Phase One and it would be expected that this also would be the case in future phases of implementation. Therefore the meeting agreed to continue to provide consistent and accurate data in a methodical and timely manner to ensure that other implementation phases in this project can be achieved.

Examination of Operations Conducted on ATS Routes in the Bay of Bengal Region

2.32 The meeting was advised that the ATS routes affected for Phase One and Phase Two of 50NM separation were considered in the conduct of the initial safety assessment for Phase One implementation. The purpose of this section of the Report is to summarize some of the information used to support the conduct of the initial safety assessment for Phase One implementation.

2.33 As this task force meeting was a Go/No-Go implementation on Phase One, the meeting, after considering the work achieved by all States and organizations involved, unanimously agreed, based on the information presented, that AIRAC date 30 June 2011 would be the implementation date for the introduction of 50NM longitudinal separation on the selected oceanic ATS routes and connecting continental routes proposed by the meeting. This would also allow an extension of 50NM longitudinal separation through the Kabul FIR on selected routes

2.34 The meeting was also reminded that other necessary items listed below should be addressed prior to implementation. They included:

- a) ATC training in 50NM longitudinal separation;
- b) ATC Human Factors issues;
- c) contingency operations in the event of loss of system integrity, by aircraft and/or ACC CPDLC equipment; and
- d) develop ATC procedures for handling non-compliant aircraft.

2.35 Subsequently after the meeting, all States concerned were sent the following check list, and requested to advise the updated progress.

**ESSENTIAL ITEMS TO BE COMPLETED BY STATES
BEFORE PHASE 1 IMPLEMENTATION OF BOB-RHS**

Item	Subject	Suggested Action	Completion Required by
1	Letters of Agreement (LOAs)	Changes and final agreement to present LOAs between adjacent ACCs. Present Status:	Before implementation on 30 June 2011
2	AIP Supplement	Where appropriate an AIP SUP describing operational changes. Present Status:	Published and distributed by 5 May 2011 (56 days before implementation)
3	ATC Training	a) Training in new procedures involving a reduced separation minimum or new procedure. b) Where appropriate, training in the use of ADS-C/CPDLC, including coordination requirements with adjacent ACCs Present Status:	Before implementation on 30 June 2011
4	Collection of data reference lateral and longitudinal deviations by aircraft	All data on deviations to be sent to the EMA for their evaluation	From implementation on 30 June 2011
5	Preparation of a Safety Case	Annex 11, para 2.27.5 – in addition to the quantitative Safety Case prepared by SEASMA in collaboration with BOBASMA, each State must prepare a Safety Case based on a qualitative assessment by ATM experts that identifies any safety risks, mitigations and controls Status:	Before implementation on 30 June 2011
6	ATS Systems	Confirm that ADS-C/CPDLC equipment or CPDC is operable to meet the requirements of 50NM longitudinal separation Status:	Before implementation on 30 June 2011
7	User Consultation	User Consultation with regard to Phase 1 of reduced longitudinal separation has taken place during all meetings of the BOB-RHS/TF	Completed

3. **ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the work and commitment of States to Phase 1 of the BOB-RHS project
- b) note the decision of the meeting to implement Phase 1 on AIRAC Date 30 June 2011
- c) encourage States who have not already done so, should confirm their readiness for Phase 1 of the BOB-RHS project in accordance to the Table presented in paragraph 2.3.4 of the working paper.

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