International Civil Aviation Organization

The Twenty-Second Meeting of the APANPIRG ATM/AIS/SAR Sub-Group (ATM/AIS/SAR/SG/22)

Bangkok, Thailand, 25 – 29 June 2012

Agenda Item 4: Review outcome of relevant meetings

SOUTH ASIA/INDIAN OCEAN ATM COORDINATION GROUP OUTCOMES

(Presented by the Secretariat)

SUMMARY

This paper presents the outcomes from the South Asia/Indian Ocean ATM Coordination Group (SAIOACG/2, Bangkok, Thailand, 22 to 25 May 2012). The Seventh Meeting of the Bay of Bengal Reduced Horizontal Separation Task Force (BOB-RHS/TF/7) had been conducted prior to the SAIOACG/2 meeting on 21 May 2012, at the same venue.

This paper relates to –

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-1 Flexible use of airspace
GPI-3 Harmonization of level systems
GPI-4 Alignment of upper airspace classifications
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-9 Situational awareness
GPI-10 Terminal area design and management
GPI-11 RNP and RNAV SIDs and STARs
GPI-12 Functional integration of ground systems with airborne systems
GPI-15 Match IMC and VMC operating capacity
GPI-16 Decision support systems and alerting systems
GPI-17 Data link applications
GPI-18 Aeronautical information
GPI-21 Navigation systems
GPI-22 Communication infrastructure

1. INTRODUCTION

1.1 Fifty (50) participants attended the meetings from Bangladesh, India, Indonesia, Maldives, Malaysia, Myanmar, Nepal, Oman, Singapore, Sri Lanka, Thailand, United States, IATA and ARINC.

1.2 Eighteen (18) working papers (WP) and six (6) information papers (IP) were presented to SAIOACG/2. One (1) Draft Conclusion, one (1) Draft Decision and one (1) Decision were agreed by SAIOACG/2.

2. DISCUSSION

Relevant Meetings Review

2.1 SAIOACG/2 was presented with the 53 draft Seamless ATM Principles developed by CAO Asia/Pacific Seamless ATM Planning Group (APSAPG).

2.2 The Sixteenth Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/16, Bangkok, 20 – 23 February 2012) analysed an airspace analysis and safety assessment from the Bay of Bengal, Arabian Sea and Indian Ocean Monitoring Agency (BOBASMA) in support of 50NM separation on various RNP10 routes. RASMAG noted there had been difficulty in completing Letters of Agreement (LOA) for data sharing, as many States had administrative issues signing agreements with foreign entities. The safety assessment indicated that both lateral and longitudinal risks were well below the Target Level of Safety (TLS). The Monitoring Agency for the Asia Region (MAAR) provided a summary of the Bay of Bengal airspace Reduced Vertical Separation Minimum (RVSM) risks, which were also below TLS at 1.16×10^{-9}.

2.3 The Nineteenth Meeting of the South-East Asia ATM Coordination Group (SEACG/19, 1– 4 May 2012) had noted that although the Asia/Pacific Air Navigation Concept of Operations included reference to certain PBN airspace capabilities and expected safety net standards (such as Airborne Collision Avoidance Systems), there was no equivalent to Conclusion 22/8 for these areas in terms of airspace mandates and application of priorities. As some Asia/Pacific administrations were planning to mandate requirements such as RNP4, SAIOACG/2 discussed the *Draft Conclusion SEACG 19/1 – Asia/Pacific Air Navigation Concept of Operations Mandates*.

2.4 The SAIOACG/2 meeting agreed that the SEACG Draft Conclusion should include reference to ADS-C and CPDLC, and therefore needed some additional text (highlighted in grey). The meeting developed an enhanced Draft Conclusion on this basis:

Draft Conclusion SAIOACG2/1 – Asia/Pacific Air Navigation Concept of Operations Mandates

That, States intending to implement Performance-Based Navigation and Safety Nets may, after appropriate consultation with airspace users, designate portions of airspace within their area of responsibility:

a) as providing priority for access to such airspace for aircraft with prescribed Performance-Based Navigation (PBN) specifications and supporting data-link equipage (ADS/CPDLC); and

b) mandating the carriage and use of an operable Automatic Dependent Surveillance-Contract/ Controller Pilot Data-link Communications Systems (ADS-C/CPDLC) system, mode A/C and/or mode S transponder, Airborne Collision Avoidance System (ACAS) and Terrain Awareness Warning Systems (TAWS) as appropriate.

2.5 India presented a brief review of the Second Bay Of Bengal, Arabian Sea and Indian Ocean Region (BOBASIO/02, Chennai, India, 11–13 April, 2012). The meeting was attended by Nepal, Bangladesh, Thailand, Singapore, Indonesia, Maldives, Seychelles, Oman, IATA and IFATCA. Since 1 July 2010, there has been no report of occurrence of either Large Lateral Deviation (LLD) or Large Longitudinal Error (LLE) for the Bay of Bengal area. India suggested that air traffic controllers needed to be trained and directed to understand the importance of reporting LLD and LLE correctly.

2.6 India and Seychelles agreed to exchange incident investigation reports of coordination failures to identify deficiencies for remedial action. A controller's exchange visit program was agreed in principle, to assist cooperation in this area.

2.7 Somalia informed the BOBASIO meeting that there was only a single International Direct Dial (IDD) line for coordination between Mogadishu Area Control Centre (ACC) and the Mumbai ACC. India advised that discussions were being held with the service provider (Tata Telecom) for converting the existing Very Small Aperture Terminal (VSAT) data line between Nairobi, Kenya and Mumbai ACC using a submarine cable with a 2 Mbps capacity dedicated line for voice communication.

2.8 Somalia requested India to consider removing the Flight Level Allocation Scheme (FLAS) but India wanted to retain the FL300 (westbound) and FL330 (eastbound) requirements due to communication limitations, noting that the majority of the aircraft were still not ADS-C/CPDLC capable. However, India would make efforts to improve level allocation other than relying on FLAS by training the Mumbai controllers about the difficulties being experienced by Mogadishu ACC.

2.9 The Maldives expressed concern over the flight level allocation on R329 over POXOD. India requested Maldives to provide sample data for analysis and initiating remedial measures. Non availability of flight plan data with Mumbai resulted in increased coordination and workload was reported. India agreed to address this issue immediately.

2.10 Due to frequent failure of VSAT line between India and Maldives, it was requested by Male ACC to have an alternate voice communication through different operator for Upper Chennai or Trivandrum. India agreed to examine the proposal of using a submarine cable instead of the VSAT.

2.11 India updated the meeting on the GPS Aided GEO Augmented Navigation (GAGAN) SBAS system. They explained that the footprint of the space segment covered a large portion of the Asia/Pacific region and that India was working towards attaining APV1.0 capability over the entire land mass. IATA thanked India for the effort in facilitating a very productive meeting, but restated that they did not support Space Based Augmentation Systems (SBAS), which they saw as principally supporting non-airline operations.

2.12 IATA asked whether the BOBASIO and the SAIOACG meetings were duplicating the same tasks as they covered similar areas of responsibility. The Secretariat suggested that the informal BOBASIO meeting was an appropriate forum for much of the detailed technical discussion for short to medium term issues. This was encouraged like the other informal forums such as ASIOACG and the Thailand-Myanmar-India meetings, as these could be held when needed, and without the formality of ICAO meetings.

2.13 In this regard, the Regional Office supported these meetings whether they were attended by ICAO or not, as it was better for States to work together to solve matters in a timely manner and independently if possible, to gain from that experience. The SAIOACG was a formal mechanism to provide APANPIRG with strategic ATM planning information and advice, so its function was different, although in future years it was possible that the informal bodies would be sufficiently mature to only require the ATM Sub-group for this function, as was the case in the Pacific.

ADS-B Planning

2.14 India had announced plans to install Automatic Dependent Surveillance-Broadcast (ADS-B) at 14 locations. Myanmar had advised of its intentions to install six ADS-B stations before the end of 2013. A key focus area for the Bay of Bengal were the ADS-B stations at Port Blair (India) and Coco Island (Myanmar) and data sharing from these facilities (**Figure 1**). This would assist the management of conflicts with ATS surveillance based separation instead of using 15 minute procedural and Flight Level Allocation Scheme (FLAS) procedures. Myanmar advised that the Sitwe installation was expected to be completed in 2012.

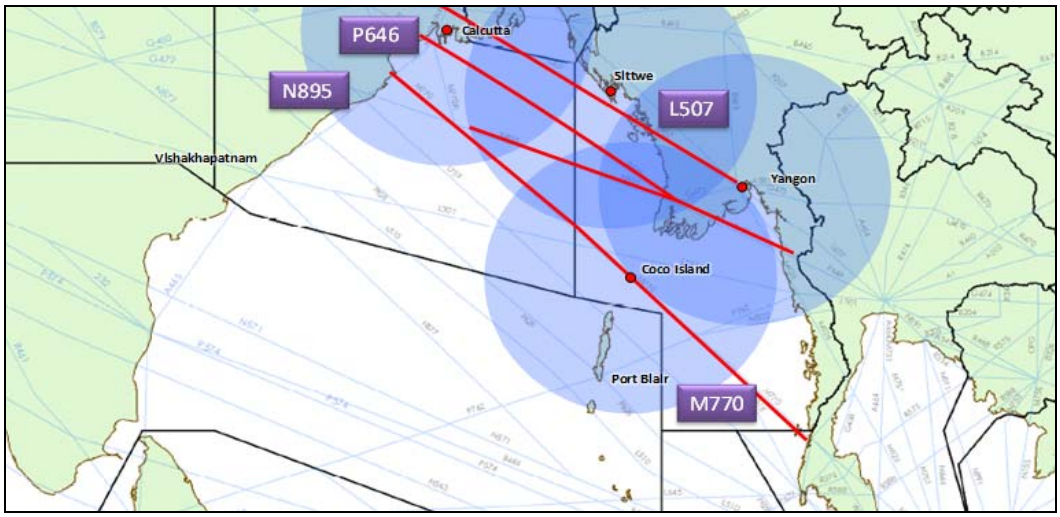

Figure 1: Proposed ADS-B data sharing between Indian and Myanmar ADS-B Stations

2.15 India presented its plan to enhance ATS surveillance through the use of ADS-B on major air routes and within terminal areas, integrated with ATC automation to supplement existing radars. During 2012, it was proposed to install seven more ADS-B ground stations to cater for medium traffic density at the airports as well as to provide redundancy. India was willing to share ADS-B data with neighbouring states such as Indonesia, Malaysia, Maldives, Myanmar, Pakistan, and Sri Lanka.

2.16 The meeting noted that sharing ADS-B data with neighbouring States and ATS units to improve safety (through the use of safety nets such as conflict alerts), confidence/trust in adjacent operations, and overall efficiency in identifying impending traffic was a key Seamless ATM enabler. One difference between ADS-B technology and traditional radars was that positional data from ADS-B systems was determined by the aircraft itself, and was 'publicly' broadcast, so there were much fewer implications regarding security of information for national security and the military.

2.17 Sri Lanka had planned two ADS-B stations, one near the international airport and one to enhance coverage towards the east.

2.18 Oman stated that sharing ADS-B data took time to organise, and they used filters to ensure that some data (such as military aircraft) is shared without the security implications. Oman was studying a proposal for a floating platform for ADS-B and VHF which is connected by fibre in the Arabian Sea, and stated the return on investment would be very positive.

2.19 IATA stated that innovative solutions like a floating platform were required, and would assist Seamless ATM. IATA was supportive of the Indian developments, in particular the provision of surveillance-based separation. IATA requested that if India was looking at mandating ADS-B in its airspace, that a common minimum Navigational Uncertainty Category **(**NUC) value and recognition of mutual approvals was considered, so that airlines only needed one approval from their State of Registry.

ATM Improvements

2.20 ICAO provided information on Air Traffic Management (ATM) improvements and capacity enhancements in the South Asia/Indian Ocean Area in the last decade, which included RVSM, implementation of Air Traffic Flow Management (ATFM) and 50NM horizontal separations, and improved communications and ATS surveillance capability. Despite the improvement efforts, the Asia/Pacific region still needed to do more as traffic continued to grow at almost double digit rates. The region had a large number of high density airports, while the escalating cost of fuel and environmental drivers translated into pressure to be more efficient.

2.21 The meeting recalled that the lateral spacing between ATS routes was 50NM or more, and that FLAS was utilized at various crossing points so the current scheme was very conservative. Thus, the meeting was urged to commit to providing the full range of ATM separation services commensurate with the potential ATM capability available, based on the Asia/Pacific Air Navigation Concept of Operations, Seamless ATM, and a focus on ADS-B implementation and data-sharing.

Air Traffic Flow Management

2.22 India presented information on issues related to ATFM operations and the BOBCAT system within the Delhi FIR and the suggestions for improvement. India had problems with convergence of ATS routes within the Delhi FIR that required a tactical handling of aircraft crossing or joining the Major Traffic Flows being managed by the Bay of Bengal Cooperative Air Traffic Flow Management System (BOBCAT). The short route lengths and requirement to hand off to Pakistan to meet their tactical requirements meant that adjustment to level allocations was regularly required.

2.23 It was estimated that more than 50% of aircraft significantly differed from their allocated slots, and there were some overflying aircraft which do not participate in BOBCAT. Sometimes due to non-availability of levels for overflying traffic, level allocations of Delhi departures were used, which involved ground delays for these aircraft. India noted that airspace saturation was observed during daytime, also resulting in delays to overflying flights and Delhi departures. There was a need to extend ATFM, perhaps through extending BOBCAT allocation during daytime.

2.24 Although 50NM was implemented on ATS routes P628 and L509, Pakistan was apparently accepting aircraft separated by 50NM only on case-by-case basis. India stated that the separation standard should be uniformly applied, unless there were special circumstances. The meeting agreed that it would be more efficient for Pakistan to accept westbound aircraft at levels transitioning to their BOBCAT levels, recognizing that both India and Pakistan had complete ATS surveillance coverage.

2.25 IATA supported conformance with the expected BOBCAT routes and allocated levels, but needed to know when airlines were not playing their part. Equally, data was needed to assess whether ANSPs were not assisting the allocation process, particularly regarding timing of the aircraft before it reached the Delhi FIR.

2.26 The meeting noted a more tactical approach should be taken than relying on more procedural restrictions, especially if this is able to take into account the actual ATM system capability. Thus the meeting did not initially support more rigid BOBCAT measures, at least until data had been properly analysed. Thailand suggested that more transfer of control information (sharing of departure and flight plan messages) should be able to be provided to assist more tactical decision-making, particularly on the India-Pakistan boundary.

2.27 Thailand presented an analysis of operational data on westbound flights operating through the Kabul FIR associated with the ATFM BOBCAT during the period July 2007 to April 2012. Since operational implementation of the ATFM procedures commenced, 97,481 aircraft had been managed, with over 90% accepting their slot allocation.

2.28 RVSM in the Kabul FIR and 50/50NM implementation had contributed to reducing ATFM delay (defined by the difference between the latest slot request and the first slot allocation from BOBCAT) from approximately five minutes per flight in October 2011 to approximately four minutes per flight in March 2012. It was also noted that since airlines had the ability to adjust slot allocation after the first slot allocation, the actual delay figure might be lower.

2.29 Analysis of the data during February – April 2012 indicated that the percentage of flights achieving preferred flight levels within the Kabul FIR had fallen from approximately 90% prior to RVSM and 50NM implementation to 65 – 76%, which was a major concern. Major causes of aircraft unable to achieve their preferred flight level were:

a) tactical ATC issues: 38%;

b) departures punctuality: 31%;

c) unknown (more data required): 24%;

d) EET inaccuracy: 6%; and

e) unachievable slot allocation: 1%.

2.30 The meeting agreed that engineering more complex procedural systems to solve a problem that had its genesis in tactical demand and capacity issues was not the answer. The meeting noted that CDM was a core component of ATFM, so if a more sophisticated form of ATFM was established, it would include the airline collaboration, and could be designed to match the tactical management capability of the present system.

2.31 India was ready to share the ATFM platform being developed jointly with the FAA at Delhi. Thailand would consider working with India to assist a seamless transition of current BOBCAT capability to the more comprehensive ATFM system being implemented.

Establishment of SAIOACG Small Working Groups

2.32 IATA suggested a mechanism to provide BOBCAT overview and enhancement and improvement management should be considered. The paper proposed the formation of SAIOACG SWG for future ATFM.

2.33 IATA noted that both the ICAO Seamless Airspace and ASBU initiatives urged States to consider airspace capability, rather than just focus on specific routes. An example of this is the application of ATM surveillance separation, so that where surveillance exists, the airspace concerned should be able to apply surveillance based separations. It was recognized that implementation may be influenced by adjacent airspace capability, which was a tactical matter between States.

2.34 IATA stated that there remained too many examples of capability being available but delivery of services being based on procedural separations such as 50NM where full radar coverage was available, enabled minimum separations as low as 5NM. Thus IATA proposed Small Working Groups (SWG) to act as a steering group for ATFM, including BOBCAT, and the application of the correct service delivery.

2.35 The meeting discussed and agreed to the following Decision regarding:

Decision SAIOACG2/2 – Establishment of SAIOACG Small Working Groups

That, SAIOACG Air Traffic Flow Management (ATFM), ATS Communications (COM) and ATS Surveillance (SUR) Small Working Groups be established to:

a) Assess the current status and planning of implementation;

b) Identify barriers to implementation;

c) Make recommendations to assist harmonized ATM procedures and applications;

d) Make recommendations that assist implementation in accordance with the Asia/Pacific Air Navigation and ATFM Concepts of Operations, and the Asia/Pacific Seamless ATM initiatives, related to the ATFM, COM and SUR fields.

Update on AMHS Trials and AIDC Testing

2.36 India noted that the Aeronautical Message Handling System (AMHS) system was first installed in 2008, although the AMHS was not utilised until late 2009 when neighbouring States had this capability. The Mumbai – Karachi AMHS link was established in September, 2010 and interoperability tests were successfully carried out in November 2010. India was waiting for Pakistan to commence parallel operations and circuit commissioning.

2.37 The 64 Kbps ATN Link between Mumbai – Beijing was established in March 2011 and the X.25 and the IRDP Connection on Aeronautical Telecommunication Network (ATN) Router was established in April 2011. Due to software issues, testing was still in progress. India expected that these issues would be resolved after software upgrades at Beijing.

2.38 India was presently having bilateral discussions with Thailand for ATN connectivity. It was expected that interoperability tests would be carried out shortly on establishing connectivity. Airports Authority of India was pursuing AMHS Connectivity with Kenya and Oman and hoped to achieve the same at the earliest.

2.39 India was presently in the process of modernization of its ATM infrastructure. Kolkata would also be upgraded by 2012, and 38 ATC Centres had been interconnected across the different suppliers. India noted that the ATS Inter-facility Data-link Communications (AIDC) testing results involving Ahmedabad, Delhi, Mumbai, Nagpur and Varanasi were very encouraging.

2.40 The Sultanate of Oman stated that in the next three to four weeks Raytheon was expected to arrive to start a testing programme for AIDC. Oman noted the version of AIDC was important, as was the need to talk to other States. In this connection, the Asia/Pacific Interface Control Document (ICD) Version 3 provided guidance to assist States. The Maldives were completing an ATM upgrade project and once that was finished they would start AIDC trials with India.

2.41 IATA emphasised that it was very important to ensure that ATM systems were interoperable with neighbouring systems and included in the specifications for vendors. The Secretariat stated that it was very important for States to understand that AIDC implementation was subject to bilateral agreement.

2.42 The Secretariat noted the speech circuit communications issues between Pakistan and India, which had been the case since 2011 controllers had been resorting to public landlines and mobile phones. The data communications between Kabul and other States had also been problematic, so a Communications Coordination Meeting was planned during 18-19 June 2012 at Karachi.

Regional Air Navigation Plan Amendment Procedure

2.43 The Secretariat presented an outline of the procedure for States and Organisations when submitting amendment proposals to the Regional Basic Air Navigation Plan. The Regional Office sometimes received amendment proposals for ATS requirements from States, which did not provide the necessary information and were without an appropriate chart. In some cases inaccurate information was provided. Additionally there was often no information provided with regard to whether the route has been coordinated with other affected FIRs. All these issues led to unnecessary delays while the Regional Office sought clarification, and increased workload. It was therefore very much in the interest of the proposing State to ensure that:

a) detailed and accurate information with regard to the route is provided;

b) an appropriate chart be provided for reference; and

c) prior consultation and agreement be sought with the affected FIRs and information on such consultation and agreement be provided (joint proposals are recommended).

2.44 The meeting discussed the format provided in **Appendix A** and agreed to the following Draft Decision for consideration by APANPIRG:

Draft Decision SAIOACG2/3 – Basic Air Navigation Plan Amendment Procedure Template

That, for ease of reference and reduction of submission errors, the ICAO Regional Office should provide the Doc 9673 Amendment Procedure on the Asia/Pacific website, including requirements to provide detailed and accurate information, an appropriate chart in the case of ATS route amendments, and information on prior consultation with any affected States.

Converting Non-RNAV Routes to RNP10 Routes

2.45 India stated that since some routes non –RNAV routes within the Mumbai FIR were separated by more than 50NM, they could be upgraded to RNAV routes. The meeting agreed that the preference was to designate all the upper airspace as RNP in accordance with the Asia/Pacific Air Navigation Concept of Operations, and the change of individual routes should be a consequential activity which should drive airline equipage in the right direction.

Arabian Sea and Indian Ocean UPR Feasibility Study

2.46 User Preferred Routes (UPR) had been highlighted as one of the initiatives to reduce emissions during the enroute phase of flight. Paper trials indicated the following that several traffic flows could benefit from the implementation of UPR:

- Arabian Gulf - Australia;
- Thailand – Kenya; and
- East Asia – South Africa.

2.47 Some of the UPRs resulted in conflicts for crossing Tracks (traffic from/to the Arabian Gulf conflicting with traffic to/from Africa). However, application of the existing FLAS would resolve the conflicts. Overall, UPR trials were useful in simulating the airlines requirement and the feasibility of UPRs within the Indian FIR portions of the proposed UPR zone.

2.48 IATA predicted an average seven minute saving per flight with the use of UPRs and thus supported the UPR programme. India would advise which agency would administer the UPR system.

Civil Military Cooperation

2.49 India presented information on the coordination between Indian civil and military agencies and the future planning for Flexible Use Airspace (FUA), summarising some initiatives by the Airports Authority of India (AAI) for effective coordination with the military, such as:

- the formation of High level Airspace Policy Body (HLAPB) to assess the National airspace usage is under consideration of by the Government of India;
- monthly meetings were held between AAI and Indian Air Force at Headquarters level to address operational issues;
- military exercises are planned well in advance so as to have minimum effect on smooth operation of civil flights;
- integration of civil and military radars within the Chennai FIR had been completed (the military had offered to provide radar service in northeast part of India where civil radar coverage was not available);
- AAI had offered their expertise in developing PBN procedures for military airports;
- ATFM was planned by December 2012 for six major airports in which military would be major stake holder;
- a direct corridors were allowed to military aircraft for time-critical operations;
- weather deviations/direct routings through military areas were permitted through direct coordination; and
- military airspace was made available in accordance with the FUA concept;
- a number of ATS routes had been promulgated through military areas either on an H24 basis or for restricted hours.

2.50 IATA placed on record the tremendous work done by India in improving the civil/military cooperation, however, it was noted that India still required an air defence number. India stated that the military had been given more monitoring tools, and would further discuss the number system with the military. Oman commended India for their civil/military development, and shared that they were developing a National Airspace Policy, which defined the policy for airspace usage. Moreover, Oman stated that education among stakeholders was the key, so the development of the overarching policy. The secretariat also commended India on its proactive stance in FUA planning.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) discuss and endorse Draft Conclusion SAIOACG2/1, regarding the Asia/Pacific Air Navigation Concept of Operations Mandates;

c) note Decision SAIOACG2/2, regarding the Establishment of SAIOACG Small Working Groups; and

d) discuss and endorse Draft Decision SAIOACG2/3 Basic Air Navigation Plan Amendment Procedure Template;

e) discuss any relevant matters as appropriate.

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