



*International Civil Aviation Organization*

**Fourth Meeting of the South Asia/Indian Ocean ATM Coordination Group (SAIOACG/04) and the Twenty-first Meeting of the South East Asian ATM Coordination Group (SEACG/21)**

Hong Kong, China, 24 – 28 February 2014

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**Agenda Item 2: Review Outcomes of Related Meetings**

**REVIEW OF BOBASIO/03 MEETING**

(Presented by Airports Authority of India)

**SUMMARY**

This paper presents a brief review of the Third Bay Of Bengal, Arabian Sea And Indian Ocean Region (BOBASIO/03) held at Hyderabad, India Between 22<sup>nd</sup> and 24<sup>th</sup> October, 2013.

**1. INTRODUCTION**

1.1 The first ATS Coordination meeting of the ANSPs within Bay of Bengal, Arabian Sea and Indian Ocean Region (BOBASIO/01) was held in New Delhi from 5<sup>th</sup> to 6<sup>th</sup> May, 2011. The Second BOBASIO/02 meeting was held at Chennai, India from 11th to 13th April 2012. The Third BOBASIO/03 was held at Hyderabad, India from 22nd to 24th October, 2013.

1.2 The inaugural session was chaired by Mr. Pramod Kumar Mishra, Executive Director (Air Space Management), Airports Authority of India. Various sessions were moderated /chaired by Mr. Len Wicks, Regional Officer (ATM) ICAO APAC, Mr. Wilson Owino, ICAO ATS Expert from Somalia and Mr. Azad Zahirul Islam, Director (ATS/Aerodromes) CAAB. In a special address, Mr. Len Wicks, the Regional Officer, ICAO APAC congratulated India for the successful conduct of the first three BOBASIO meeting and made a special mention that such meetings acted as a catalyst in bringing about quick and welcome changes that provided excellent solutions to ATM issues to be resolved between two or more nations. He observed that the participation of States which neighbor the BOBASIO region from the MID and the EASAF region including Seychelles and Somalia to deliberate on some important ATM issues with the representatives of Mumbai and AAI CHQ was a very positive move and appreciated the host India for encouraging such participation.

1.3 The meeting was attended by 51 participants including 26 international delegates from Bangladesh, Thailand, Singapore, Indonesia, Seychelles, Somalia, Malaysia, and Myanmar as well as IATA and ICAO. Delegates from International Airlines including Singapore, Emirates, Cathay Pacific, and from the Indian Navy also participated.

1.4 Seventeen (17) Working Papers (WPs) and eight (08) Information Papers (IPs) were presented to the meeting. Power point presentations were made by Mr. Len Wicks on Seamless ATM Plan in addition and on BOBCAT by Aero- Thai respectively.

## 2. DISCUSSION

### Seamless ATM Plan

2.1 AAI presented a background on how the Seamless ATM Concept was developed by the Asia Pacific Seamless ATM Planning Group. India urged the BOBASIO States to utilize the plan to develop planning for State implementation of applicable Seamless ATM elements and also ensure that relevant decision-makers are briefed on the Seamless ATM Plan. India mentioned that the States should consider participating and contributing to Seamless ATM system in collaborative training and research initiatives. India noted that certain key issues need to be discussed on a multilateral platform and only with cooperation from adjacent States would it be possible to develop Seamless ATM across the region.

2.2 The meeting noted the development of the Seamless ATM Plan and its highlights and agreed to comply with the requirement to provide comments through the regional seamless ATM reporting form to the ICAO Regional Office by the 1st March, 2014. The meeting placed on record India's role in conducting the seminar on seamless ATM on the 21st October, 2013 at the same venue.

2.3 The Regional Officer ATM from ICAO, Mr. Len Wicks made a presentation on the ICAO APAC Seamless ATM Plan for the benefit of the member States which could not participate in the Seamless ATM workshop conducted at Hyderabad, on the 21st October, 2013. This plan had been endorsed by APANPIRG/24 earlier in 2013. The presentation touched upon several areas of interest to the BOBASIO meeting, including the interoperability issues between OLDI (On-Line Data Interchange) used by Oman and AIDC (ATS Inter-facility Data Communications) used by India. Delegates were provided with a brief summary of the key Seamless ATM Plan elements from the Plan's Preferred Aerodrome/Airspace and Route Specifications (PARS) and Preferred ATM Service Levels (PASL). It was noted that there was Seamless ATM Guidance Material available on the Regional Office web site, under APAC e-Documents.

2.4 States, ANSPs and aircraft operators (civil and military) were urged to start Seamless ATM Planning now, in order to align objectives and milestones with other States in the region. The presentation concluded with a serious note that without effective regional Seamless ATM implementation, there would be a significant economic and environmental penalty, as well as safety implications.

### India's Proposal towards establishment of sub-regional/regional ATFM

2.5 This WP described the outcomes of ATFM Steering Group 1 and 2 meetings and the deliverables including the APAC ATFM Concept of Operations and ATFM Communication handbook. A Global ATFM Manual has been submitted to the ICAO Assembly 38 as Doc 9971 Part II, by a team of experts constituted for the purpose.

2.6 India is in the process of implementing ATFM on a nationwide basis in a phased manner and intends to develop capabilities in supporting sub-regional ATFM system. India foresees gradual development of harmonized upper airspaces spanning across many States as small volumes of airspace without adequate ATM infrastructure will be having difficulties in the development of ATFM systems/activities in the near future. Collaborative efforts are required between many States to build such platforms which eventually will develop into a sub-regional and regional ATFM framework.

2.7 India also proposed to initiate studies on traffic flow management across two major traffic flows viz.,

- a) East- West flow from Indonesia-Malaysia-India and Muscat India
- b) East-West flow from Myanmar-Bangladesh-India and Pakistan India

2.8 India requested support from the members for such imitative, including inter alia the exchange of strategic and tactical information about flights, airspace data, weather information, airport data etc. The meeting also noted India's efforts in developing ATFM in India and their proposal for ATFM measures across the MTF.

2.9 Singapore supported India's call for collaboration and expressed their willingness to share their experiences. Singapore also mentioned that a tripartite project involving Bangkok, Hong Kong and Singapore has embarked on a collaborative approach to a sub-regional ATFM/CDM concept. The commonality of ATM issues, type and volumes of air traffic managed, similar tropical weather conditions drive the collaboration Singapore further apprised that there was an ongoing information sharing trial involving the three ANSPs which aims to impart predictability and confidence into operations through enabling common situational awareness. The post-trial analysis was envisaged by end 2013.

2.10 The proof of concept research project supported by Airbus Prosky was being undertaken as a sub-regional ATFM proof of concept study which involves industry stakeholders. The project will include concept analysis, exploration, development and a benefit analysis to strengthen the business case for such a sub-regional concept. The Fast Time and Human in the Loop (HITL) will be conducted on a simulation test bed at the Singapore Aviation Academy. The findings of this will be shared in ATFM steering meeting scheduled in 2014.

#### Use of ADS – B Data for Monitoring Aircraft Height Keeping Performance

2.11 BOBASMA, the Indian EMA, detailed the capability of India, in the near future to monitor aircraft height-keeping performance using aircraft geometric height derived from ADS-B (Automatic Dependent Surveillance-Broadcast) reports, which includes aircraft geometric height, which is a key component in the ASE estimation process. Separation and Airspace Safety Panel (SASP) and the Regional Monitoring Agencies Coordination Group (RMACG) have endorsed the use of ADS-B geometric height as a means of ASE calculation. India requested ICAO to explore the possibility of requiring FAA and ASA to share the tools that they employ in validating the use of ADS-B data in calculating ASE.

2.12 The ICAO representative answered in the affirmative and said that these agencies are committed to improving safety through such monitoring and will be more than willing to share the technical know-how. The Cathay Pacific airline representative informed the meeting that as an operator, this activity of height keeping monitoring is extremely useful and congratulated India on the usefulness of the paper presented.

#### PBN Implementation in the sub-region through collaboration

2.13 India provided details on implementation of, PBN RNAV-1 SID & STAR in terminal area and PBN based RNP-10, RNAV-5 city-pair ATS routes in en-route phase. The paper mentioned that the PBN SID & STAR are being designed to facilitate Continuous Climb Operations (CCO)/Continuous Descent Operations (CDO) and that these initiatives have provided noteworthy environmental benefits. It also brought out that RNAV-1/RNP-1 SIDs and STARs at 10 international airports have been implemented to date.

2.14 AAI was also involved in the development of PBN procedures at defense airports and has collaborated with the Indian Navy to implement PBN procedures at Goa airport.

2.15 The paper also invited Neighboring States and India to work together in jointly developing PBN RNAV-5 routes and arrival/departure procedures to form a seamless network of PBN routes and arrival/departure procedures in the sub-continent.

2.16 Mr. Azad Zahirul Islam, Director, ATS CAAB informed that ICAO Regional Sub Office, Beijing is committed to support Bangladesh through an MOU between these two organizations. Bangladesh informed that Emirates Airlines would also extend their support in developing and validating the PBN Procedures. India informed that AAI is ready to provide assistance to neighboring States in PBN Implementation.

#### Indian Airspace & Air Route Changes

2.17 The paper highlighted the successful upper airspace harmonization of Chennai FIR including the vertical consolidation in contingent situations by Lower ACCs and the plan to complete the UAH of the other three Indian FIRs by 2014, with a planned migration to Class A categorization in the Upper airspace. The paper also mentioned about the introduction of L 518 which provided connectivity to Hyderabad from the APAC South East Asian States; L875 connectivity to Mangalore, Bengaluru and Chennai and L 756 connectivity to Male from Seychelles FIR (ICAO EASAF States) and the excellent cooperation and timely coordination between India and Male which made it possible to simultaneously promulgate the segments of the ATS Route L756 falling in the two FIRs.

2.18 India mentioned through the paper its adherence to FUA principles and the creation of Temporary Reserved Areas and Temporary Segregated Areas on SUA requests, and shall henceforth create flexible airspace structures. India also briefed IATA that AAI has examined their request to convert some of the domestic routes to international routes to provide access to these airports without any ambiguity or a need to clarify the availability of domestic routes.

2.19 India detailed the meeting regarding its RNAV 2 plans and extended an invitation to its neighbors to create a joint mechanism to design cross border RNAV 5 and RNAV 2 city pairs. It also mentioned that the TLS studies for RNAV 2, to be implemented by Q2 2014, will be performed by BOBASMA. Bangladesh expressed its willingness to engage in a purposeful joint airspace design exercise that India had proposed.

2.20 The ICAO representative appreciated the paper and mentioned that it included elements of almost a strategic plan and appreciated the excellent civil military coordination and BOBASMA's role in the migration from RNAV 5 to RNAV 2. IATA also urged India to implement 30 NM longitudinal separation in the entire airspace. India briefed IATA that migration to 30-30 depends on aircraft equipage. ICAO wanted the States to explore the possibility of declaring its ability to apply 30NM on opportunity basis and use it at least on crossing tracks. He also opined that declaring airspace to its ATM capability should be considered, it is non-exclusive type of airspace classification that means aircraft not meeting the requirements can also utilize the airspace. The move will help both pilots and controllers.

2.21 Malaysia stated that they have a plan to restructure Kuala Lumpur FIR in near future taking into account of PBN application and will factor in the purposed establishment of RNP 4 routes in the Bay of Bengal to support 30/30 NM separation. This would be done through engagement of a consultant and mentioned that if there is a need for consultative process, they would do so immediately. India thanked Malaysia for the endorsement and requested Jakarta to undertake an exercise with India.

#### Implementation of Flexible Use of Airspace in India

2.22 India detailed the significant progress made in the implementation of Flexible Use of Airspace and the constitution of the National High Level Airspace Policy Body. The paper also detailed the excerpts of the FUA implementation Road map and listed the activities to be undertaken and the bodies to be constituted under the three levels of ASM, including the creation of Airspace Management Cells at the ASM level 2 and the plans to integrate the National AMC and the Central Command Centre of the Central ATFM likely to be in place in 2014.

2.23 The paper also highlighted the cooperation of the Indian Navy authorities in reducing the upper limit of an SUA which has led to the introduction of a RNAV 5 city pair along the west coast of India, connecting as many as 7 international airports including, Mumbai, Trivandrum and Cochin.

2.24 IATA asked if the meeting could involve Pakistan and Afghanistan to improve the use of Flexible Use Airspace (FUA) principles in the airspace of those States. The ICAO representative mentioned that the regional office may try and bring this point in a special coordination meeting, between India, Afghanistan and Pakistan, whenever it takes place.

2.25 Malaysia shared its support on this issue and informed the meeting that they believed that this is the way to move forward in managing the airspace to fulfil both civil and military requirement. Their good relationship has been reflected through the establishment of conditional route for civil use through military airspace and managing military activities within the heavy traffic in Kuala Lumpur TMA.

#### Proposal to introduce 30 NM RLS in BOBASIO Airspace

2.26 The paper mentioned that it would be appropriate to the States present to explore the possibility of achieving the objectives of implementing RNP 4 PBN specifications within the Bay of Bengal area and the Oceanic area of the Mumbai FIR. The paper brought out the fact that the phased implementation of 50 NM RLS in the BOBASIO airspace taking into consideration the constraints of all member States involved has given enough experience to the policy makers within the individual ANSPs on the issues involved in planning and implementing uniform separation standards over airspaces covering more than one member State.

2.27 An analysis of the existing RNP10 routes in the airspace shows that four routes M300, N571, P570 & P574 which traverse the entire BOBASIO airspace in an east - west direction over an average distance of 2050 NM and an average flying time of 4Hours 30 Minutes, cater to medium density traffic and are used by long haul aircrafts flying between airports in South east Asia and the Middle east & Europe. Even if other adjoining states are not in a position to provide 30 NM RLS within their FIRs, aircraft on these routes could still benefit if 30 NM RLS is provided within the Indian airspace, as the distance flown across the Indian FIRs of Chennai & Mumbai accounts for a major portion of their flying time.

2.28 The paper stated India's readiness to implement 30 NM reduced longitudinal separation on these four routes as a first step towards full implementation of 30:50 Horizontal separation and urged States to the west and east of India, especially Oman, Malaysia and Indonesia to implement the 50 NM reduced longitudinal separation introduced in 2011 -12 in both letter and spirit to enhance the benefits of a uniform application of separation standard across the entire BOBASIO airspace. It also urged IATA to sensitize airline operators to equip aircraft with FANS/1A data link capability.

2.29 ICAO appreciated India's concern and urged States involved to expeditiously address the issue. Malaysia stated that they had continuing glitches in their ADS-C and CPDLC system after the system was integrated with the main system, leaving them to rely on the standalone which has limited capability which has effaced them in implementation of 50 NM more robustly. Their attempt to adopt on DCPC via VHF is not successful due to limitations on part of reception. Usages of ADS/CPDLC with continued problems are affecting the implementation of 50NM x 50NM separation in the Kuala Lumpur FIR. The members agreed to address the issue by referring the matter to their appropriate authority.

ADS B Implementation and Data Sharing

2.30 India has committed its willingness for resource sharing at ICAO meetings. In the SITF/11 and BOBASIO/2 meetings as well as APANPIRG/22 and APANPIRG /23 India expressed its willingness to share ADS-B data with Myanmar, Maldives, Sri Lanka, Malaysia and Indonesia. It also added that the process to obtain regulatory approval has commenced and Stake holder meetings have been conducted in Dec, 2012 and Jan, 2013 to detail the business case and to spread the awareness about the mutual benefits that will accrue to both the ANSP and the Airline Operators by their participation. The paper also mentioned that the Indian ANSP has already commenced the process of acquiring approval from the Government and Regulatory agencies for ADS-B data sharing with neighbors, especially Myanmar and this is expected to significantly improve efficiency and safety over a number of airways over the Bay of Bengal, leading to seamless ATM operations using ADS-B as a key component.

2.31 The meeting noted a possible initiative whereby ADS-B data from the Indian Andaman Islands could be provided to Malaysia to provide some surveillance coverage into the adjacent Kuala Lumpur airspace, which could facilitate a transfer of communications (or transfer of control) point at the edge of Kuala Lumpur's VHF coverage within their FIR, thereby enabling 50NM x 50NM separation to be provided in the airspace concerned. Malaysia and India were asked to provide an update to the SAIOACG meeting in February 2014 on this initiative.

Need for greater awareness on importance of reporting aircraft deviations

2.32 BOBASMA presented a summary on the data on Gross Navigational Data submitted by the member States of BOBASMA during the last twenty months. Though the formal monitoring program to assess the occurrence of Large Lateral Deviations and Large Longitudinal Errors (LLDs & LLEs) in the BOBASIO airspace commenced from 1st July 2010 very few States had been complying with the requirement to report aircraft deviations in the horizontal plane. States were urged to take this matter seriously as LLDs and LLEs have had significant influence on the outcome of safety assessments before and after implementation of PBN based separation. States were requested to increase the awareness on safety issues among all stake holders involved in aviation activity, particularly among the Air Traffic Controllers who ought to observe and report all aircraft deviations without fail.

2.33 BOBASMA also requested the member States to provide PBN and data link Approval Data. BOBASMA stressed that with the Asia/Pacific Regional PBN Implementation plan, recommending RNP2 or RNP4 as the Preferred Navigation Specification in the Oceanic airspace in the medium term (20013-2016) and that such implementations shall only take place following conduct of a safety assessment that demonstrates that an acceptable level of safety will be met.

2.34 All participating States agreed to report occurrences of LLDs and LLEs to BOBASMA in timely manner and sensitize their controllers to report the occurrences of LLDs and LLE. AAI informed that controllers at Indian ATC Centers have been sensitized. It was agreed that reporting of occurrences may be encouraged based on the principle of Just Culture.

Update ADS-B Programme in Indonesia (IP/03)

2.35 Indonesia presented an update on the installation of 30 ADS- B Ground stations with dual system and 1 ADS-B Ground station with single system for Test Bed purpose and that 21 ADS-B Ground Stations in the Eastern part of Indonesia have been integrated with ATC system in MAATS-Makassar and 9 ADS-B Ground Station in the Western part of Indonesia have been integrated with JAATS- Jakarta. The paper mentioned that the Test-Bed system was located at the DGCA Headquarters Office in Jakarta monitors and controls the ADS-B Data from these 31 ADS-B Ground Station.

2.36 Indonesia-Australia, establish National ADS-B Task Force for ADS-B implementation, upgrade ADS-B Service Level Category from Tier-2 to Tier-1, Certification of ADS-B Facilities, Publication of ADS-B Service (2013), mandate ADS-B equipment for en-route in Indonesian airspace (2016), upgrade ADS-B Ground System capability to support DO-260-B standard.

2.37 India requested Indonesia to provide details of the range of ADS-B located in Banda-Aceh, so that it may explore the requirement to propose a data sharing with Indonesia.

2.38 IATA requested Indonesia to issue an Aeronautical Information Circular (AIC) to alert aircraft operators of the intention to issue an ADS-B mandate in 2016 and considered a 2016 to be an aggressive timeframe.

#### Report of SWG-A Meeting

2.39 SWG-A: Airports Authority of India (Mumbai, Delhi and CHQ) &, Somalia, ICAO expert-ICAO Somalia, Seychelles, ICAO APAC Regional Officer-ATM:

- The group discussed issues pertaining to application of FLAS in Arabian Sea airspace and agreed to the following:
- Mumbai OCC will analyze the traffic pattern to/from AFI regions in terms of time of operation and density by 15th November 2013.
- Mumbai has committed to conduct a sensitization programme by 31st October 2013 for OCC controllers with emphasis on, that the FLAS should be adopted as last resort for level allocation.
- AAI is requested to conduct a study on performance of HF in Arabian Sea airspace for optimization.
- ICAO Office Mogadishu/Nairobi shall coordinate with concerned airlines by 5th November 2013 to ensure required level of position reporting by Kenya Airways and flight crew of other AFI region based airlines,
- The flight crews may be reminded of the requirement to contact Mumbai FIC at least 10 minutes before crossing Mumbai – Mogadishu/Seychelles FIR boundary. Non-compliance with this requirement may result in getting the flights stuck up at FLAS Levels only.
- It was agreed that for measuring satisfaction of airlines in getting the appropriate levels, a suitable mechanism will be devised by concerned BOBASIO members. It was also understood by all that as long as legacy aircraft continue to fly in this region without ADS-C/CPDLC and performance/coverage of HF remains inadequate, the system of FLAS may continue. However, FLAS should normally be used only when boundary estimate coordination could not be done due to ground - ground communication difficulties or in contingency (non-normal circumstances)
- Somalia and India agreed to sign LOA between Mogadishu FIC and Mumbai OCC.
- Seychelles informed that AIDC is not yet ready for effecting coordination with Mumbai.

#### Report of SWG-B Meeting:

2.40 SWG-B: Airports Authority of India (Kolkata, Chennai and CHQ), Myanmar, Chennai, Bangladesh; Singapore, Thailand:

- India and Myanmar finalized a draft agreement template and states concerned would be signing ASAP.

- India and Myanmar incorporated required amendments in existing LOA between Yangon ACC and Kolkata ACC/Chennai OCC. India signed the amended LOA and Yangon would get signed it by Appropriate Authority and the effective date of revised LOA is 1st January, 2014.
- India and Bangladesh discussed about non adherence to some of the procedures enumerated in the existing LOA between Kolkata and Dhaka ACC. Both ANSPs agreed to adhere to these procedures with effect from 07.11.2013.
- **Regional ATFM:** A discussion on the process of evolving a regional framework for ATFM within Asia Pacific was invited by India. Indonesia, Malaysia, Myanmar, Singapore participated. Singapore representative explained the progress made in developing the model in collaboration with Bangkok, Hong Kong and Malaysia and was willing to share their experience. Singapore explained that the process aimed at developing distributed virtual ATFM node where every ANSP will have autonomy over the system and allow information exchange between them in a seamless manner.
- After detailed discussion, India urged the states to carry back home the proposal discussed for establishing sub regional ATFM initiatives between Indonesia, Malaysia, India, and Muscat, and Myanmar, India and Pakistan with the inputs from Singapore on evolving a process for the system. Indonesia, Malaysia, Muscat, Myanmar and Pakistan will bring to the SAIOACG/04 meeting a draft paper on the ATFM processes and a concrete proposal with an objective of developing a Sub-regional ATFM model so that information exchange can be standardized and common proof of concept evolved.
- The point of contact from Singapore for coordination is Mr. Sivapirakasam R, CAAS and from Bangkok, Mr. Piyawut, (Toon), Aero Thai. The meeting also considered to have a point of contact established with the representative of Hong Kong on this subject.
- **ADS B meeting at Beijing:** India urged Myanmar to provide a paper on the ADS B data sharing among states establishing point of contacts and draft ADS data sharing agreement so that initial ground work can be completed while awaiting governmental clearances for enabling ADS B data sharing among states. India will also submit the working paper in this regard.

Report of SWG-C Meeting:

2.41 SWG-C: Airports Authority of India (Chennai and CHQ), Indonesia, Malaysia:

- The draft Coordination Procedures between Chennai OCC and Kuala Lumpur ACC was finalized by the Appropriate Authorities of the respective States. Malaysia requested to use Coordination Procedures in place of LOA which was agreed by India.
- With regard to reporting of aircraft deviations occurring due to coordination failures, such as LHD/LLD & LLE, it was agreed that responsible officers from Kuala Lumpur will exchange information through emails within 30 days of such occurrence. Regarding the LOA/Coordination Procedures for AIDC data exchange between Chennai and Kuala Lumpur/Jakarta, Chennai presented the draft prepared by Chennai to both Kuala Lumpur and Jakarta.
- Issue of notification requirements of airspace reservation in Indonesian FIR due to Rocket launch activity in India was discussed with participation from Chennai team and members from AAI CHQ. The issue was the delay in the receipt of the notification in NOF.



- Towards achieving quicker coordination, Indonesia requested coordination from ANSP to ANSP and suggested to have a letter of coordination agreement in this regard.
- A draft LOCA template was prepared. The same would be submitted to respective organization for evaluation and consideration for signature.
- Indonesia intimated that the project of ATFM is in the initial stage of planning. Point of contact for the same is RIZA FAHMI ATS System Senior Manager,rfahmi@yahoo.com
- Myanmar informed that ATFM System has been introduced in the country for reducing domestic traffic congestion and point of contact would be communicated. Further, they agreed to share the ATFM implementation information with other members of the region.

#### ATM Contingency Plan

2.42 AAI highlighted the requirement of coordination among States to prepare Level-2 ATM contingency plan for safe and orderly flow of international air traffic through their airspace during ATM contingency. India, which is a member of the RACPTF (Regional ATM Contingency Plan Task Force), brought to the notice of the house that the Level 1 plan of India was deemed by the Taskforce to be robust, whereas the Level 2 plan, which was discussed in BOBASIO/2 lacked the interfacing with the Level 2 contingency plan of the neighbors and therefore relegated to a lower status of “incomplete”. The second meeting of RACPTF Contingency Plan Review Team was formed to consider relevant portions of Level 1 (internal State) and Level 2 (Inter-State) ATM Contingency Plans, and identified areas where ATM contingency planning required improvement, in order to support the development of a Level 3 (Regional) ATM Contingency Plan, based on Basic Planning Elements agreed by the Task Force.

2.43 India urged the BOBASIO participants to discuss and agree for ATM contingency routes, which are compatible with Indian contingency routes so that agreed routes can be discussed in the next ATM contingency plan task force meeting.

#### Search and Rescue agreements with the neighboring States

2.44 India highlighted the requirement to execute agreements with neighboring countries for cooperation on SAR services under the provisions of the Standards and Recommended Practices contained in Annex. 12. Also in the First meeting of the Asia/Pacific Regional Search and Rescue Task Force meeting held in February 2013, it was categorically emphasized that the implementation of SAR Agreements be facilitated as early as possible.

2.45 The highlight of the paper is an Annexure which provides a template for such an agreement which has been appreciated by the ICAO APAC Regional Director who has advised that the template provided by India be considered by all concerned States to be adopted appropriately and further discussions on LOAs be brought up in the SAR task force meeting scheduled to be held in the last week of January 2014. India stressed the requirement for SAR agreements with adjacent States such as Malaysia, Indonesia, the Seychelles, Somalia, Bangladesh and Myanmar. ICAO suggested a tiered approach if there were problems signing off such SAR agreements due to the need for signoff at political levels – more importantly, it was necessary to enact the basic technical procedures supporting SAR responses as soon as possible.

#### Inter State ATM Contingency Plan in Indonesia

2.46 This Information paper stated that Indonesia does not have any formal Level 2 CP agreement with adjoining States, but is reportedly carrying out meetings with its neighbors in its South East including Australia, Timor Leste et al.

2.47 The meeting took note of the paper and wanted Indonesia to explore the possibility of established contingency procedures with its neighbors in the BOBASIO region including India, Malaysia, Sri Lanka and Singapore.

#### Green Initiatives

2.48 India as Chair of Arabian Sea Indian Ocean ATS Coordination Group (ASIOACG) and founder Partner of Indian Ocean Strategic Partnership to Reduce Emission (INSPIRE) presented WP 9 on Establishment of Arabian Sea Indian Ocean User Preferred Geographic Zone (ASIO UPR Geo Zone) wherein the success of informal regional ATS Coordination Group (ASIOACG) and INSPIRE, shows that collaboration among the member ANSPs for implementing Global Best Practices of User Preferred Routings that has large potential of saving millions of tons of and carbon emission.

2.49 Encouraged by the recognition and appreciation for the results of INSPIRE Operational Trials by 12th Air Navigation Conference, Montreal 2012, the third combined meeting of ASIOACG 7/INSPIRE 3, in Mumbai 2012 decided and the States have promulgated ASIO UPR Geo Zone. On 17th October 2013, the AIP Supplements issued by 9 ANSPs of Australia, Sri Lanka, Maldives, Mauritius, Seychelles, ASECNA Madagascar, South Africa, Kenya and India (total 9) became effective.

2.50 The meeting was informed that as of now, on an average 200+ weekly flights are authorized to fly UPRs. The UPR Zone is estimated to reduce CO2 emissions in excess of 10,000 Tons by saving about 3000+ Tons of fuel per year. It was also noted by the meeting that INSPIRE Programme has earned ATC Global Award for Strategic Management of Air Transport Operations.

#### Delhi Airport-CDM: Implementation Status

2.51 India presented WP 10 on the implementation of Airport- Collaborative Decision Making at Indira Gandhi International Airport, New Delhi. The project is called Delhi Airport- Collaborative Decision Making (DA-CDM), the first such implementation in India and promulgated through AIP Supplement No. 21/2013 effective from 22nd August 2013). The DA-CDM has been jointly implemented by Airports Authority of India in collaboration and Delhi International Airport Limited (DIAL), the airport operator and involves other stake holders such as Airline Operators (AO), Ground Handlers (GH), Support services viz., CISF [Security Agency], Customs and Immigration, Air Force Movement Liaison Unit etc., After the implementation of the ATFM the Delhi Air Traffic Flow Management Unit (ATFMU) is likely to be included in this group.

2.52 The efficiency of the Air Transport System is highly dependent on traffic predictability. DA-CDM effectively enhances predictability (this reduces buffer times for resource planning and flight times), overall efficiency and punctuality by linking and sharing of accurate and timely information amongst Airlines, Airport Operator, ATC, etc.

2.53 As a result of implementation of DA-CDM, the On Time Performance (OTP) of airlines have improved to the extent that international observers such as Flightstats has ranked Delhi Airport at global number 2 in July and August 2013 and global number 3 in September 2013. Improved OTP of airlines has come for praise in international print media as well. The States lauded the CDM initiatives of Delhi Airport.

#### Indonesia ATFM/CDM and PBN Initiative

2.54 Indonesia presented an information paper on its ATFM/CDM and PBN initiatives. The paper brought to light the problems associated with FPL distribution as the airports are spread over a 17,000 islands, with the situation demanding a strategic plan. The paper listed their plan to establish ASEAN Open Sky Policy which will liberalize the aviation market within 10 ASEAN Nations with 500 million population.

2.55 The paper also detailed Indonesia's evolving ATFM/CDM to be implemented nationwide, with their national ATFM Centre expected to be operational by 2015. This centralized FPL and Traffic Flow Management is envisioned to handle the entire flight plan and slot distribution for departures and reduce congestion of overflying traffic. This concept is being developed in phases:

- a. Procedural A-CDM: operation trial by end November 2013
- b. AMAN System: by Q2 / 2014
- c. Flight Plan Management Centre: by Q4 / 2014
- d. Strategic National ATFM Centre : by end of 2015

2.56 The State has also detailed an ambitious plan to introduce unidirectional RNAV/RNP routes in the near term. The meeting took note of the developments in Indonesia.

#### CDM platform at Mumbai

2.57 The Mumbai CDM team presented their A-CDM initiatives and followed it up by an exhilarating live demonstration of their Internet Protocol based system with 100% automated database, derived from other servers like AMHS, Met servers, AIS database etc., This web based application is an information sharing platform among aviation partners at CSI Airport, Mumbai and builds an Airport- Collaborative Decision Making (A-CDM) system. The Mumbai A-CDM has resulted in direct advantages such as Reduction of delays at holding point, Orderly flow of traffic, Optimization of capacity and better OTP, Reduction of RT congestion and achieving Common Situational Awareness(CSA) as well as indirect advantages viz., reduction in wastage of aviation fuel, reduction in carbon emission, reduction in passenger discomfort, transparent and bias free handling of flights and the consequent increase of trust level between ATC and Airlines Operators.

2.58 IATA urged BOBASIO states planning A- CDM to ensure the "Business Rules"; terminology and procedures were aligned regionally to ensure User interfaces with various A-CDM systems are common. The Mumbai GM (ATM) mentioned that the airline only needs to change EOBT if at all deemed necessary, so the flight crew or the airline is not affected by multiple platforms. AAI will standardize the procedures and try to use a common software or format whenever and wherever it is able.

#### ATN/AMHS and AIDC Implementation

2.59 Airports Authority of India informed the meeting that it is in the process of implementing AIDC within ATC centres in India. The AIDC systems are using APAC AIDC ICD version 3 for AIDC and its implementation is being seriously pursued and extensive trials are being carried out between various automations systems showing successful results. Some of these airports are already exchanging live AIDC messages. During trials, several interoperability and operational issues were encountered between different ATS Automation Systems which have been mostly resolved.

2.60 India is one of the countries which have boundaries with adjacent ATSU's of APAC, MID and AFI Region states. There is plan to establish AIDC with adjacent ATS units of different States viz. Bangladesh, Myanmar, Pakistan, Nepal, Seychelles, Malaysia, Indonesia, Sri Lanka, Kenya, Oman and Maldives but the plans and readiness of other states are presently not available. Therefore India urged neighboring Centers to share their plan with concerned states for an expeditious AIDC implementation in a time bound manner.

2.61 India requested ICAO to standardize single ICD version within APAC region and all the regions of ICAO to achieve harmonious implementation.

2.62 India implemented the AMHS and the circuit between Mumbai and Singapore had been operational since 23rd March 2011. India is continuously pursuing with other BBIS/BIS states for early AMHS implementation in line with regional and global plans for establishing AMHS network.

2.63 The present status of AMHS is as appended below:

- Mumbai-Beijing: After successful completion of Pre-operational trails in July 2013, India has already forwarded the draft TMC to China for perusal and response awaited.
- Mumbai-Bangkok: Both India and Thailand successfully completed the Pre-operational trials. Following this, draft TMC were exchanged and agreed upon. Steps are being initiated to sign and exchange the TMC to commence regular AMHS operation before the end of Q4.
- Mumbai-Karachi: India and Pakistan (Karachi) has successfully completed IOT in November 2010. Both states have completed the trial operation in 30 March 2012. AMC tables are required to be updated at Pakistan end to start pre- operational trials. Necessary response from Pakistan is awaited.
- Mumbai-Muscat: The circuit is presently operated on AFTN over TCP/IP through AMHS gateway. Oman Civil Aviation Authority has agreed to commence preoperational trials in the 3rd week of October 2013.
- IOT on AMHS between India and Nepal is in progress. Meanwhile, draft TMC is being exchanged for mutual consent. 2.8.2.3 Bangladesh has recently installed Comsoft AMHS system. Now, India and Bangladesh are taking initiatives to establish 64 KBPS leased line connectivity and commence the trials.
- Sri Lanka has recently contacted India to establish new circuit for AMHS connectivity. India is sharing its experiences with Sri Lanka for successful AMHS implementation,
- Bhutan has not yet communicated their implementation plan.
- Kenya as per communication received planned their implementation in July 2013. However, no further input is received and efforts are being made to coordinate with Kenya for early implementation.

2.64 ATN/AMHS in Indonesia has been installed in Jakarta (Soekarno Hatta International Airport), Makassar, and Jakarta (DGCA Head Quarter/NOTAM Office). Inter-operability test ATN/AMHS Jakarta – Singapore was finished on July 2011. Indonesia – Singapore is ready for bandwidth upgrading to 64 kbps. The Inter-operability test has been agreed as per AMHS Manual for Pre-Operational Test.

2.65 During the trial, the AMHS system will not affect the AFTN existing operating System. AIDC in Indonesia has been implemented via AFTN only in Makasar FIR, and has connectivity with Brisbane FIR.

#### Update on Implementation of ASBU Block 0 Modules

2.66 India updated the meeting about their alignment to the Aviation System Block Upgrades methodology which is a part of the ICAO updated Global Air Navigation Plan (GANP), which has been endorsed at the recently held ICAO 38th Assembly. The paper outlined about the link between ASBU, Seamless ATM Plan and the Regional Air Navigation Plan and detailed as to how the implementation process driven by the ASBU module elements will enable all States and stakeholders to realize the goals of global-harmonization, increased capacity, and environmental efficiency in a unified manner.

2.67 Thereafter, the paper brought the focus to the highest priority that States may accord in the implementation of six modules in ASBU Block 0, including B0-FRTO, B0-FICE, B0-DATM, B0-NOPS, B0-TBO and B0-ASUR, identified by the APAC Seamless ATS Plan and endorsed by APANPIRG/24.

2.68 The paper introduced India's plans of updating the National Air Navigation Plan (NANP) in line with the ASBU roll out keeping in mind the ICAO strategic objectives. The paper showcased India's aggressive pursuit in the implementation of eighteen (18) Block Zero Modules with emphasis on the six (6) critical Block-0 elements, to ensure regional and global seamless Air Navigation Services over a crucial airspace connecting three ICAO regions.

#### GAGAN services for the region

2.69 The fourth SBAS system, GAGAN, has passed the tests for RNP0.1 certification and is undergoing algorithm reviews for achieving APV 1 certification. The certification process for the first step will be completed by November 2013 and will join the SBAS service providers group. Preceding BOBASIO meetings had brought out the opportunities that GAGAN would provide neighboring states and other states within GAGAN footprint to ensure seamless GNSS transition within APAC region. India urged States to consider the early implementation of GAGAN signal usage and requests to provide willingness to associate with Indian ANSP, AAI in working together an optimized and cost effective solution for installing reference stations and monitoring systems to meet the GNSS guidelines provided in the ICAO annexes and the Assembly resolutions. India presented the Operation Test and evaluation tools developed for assessing GAGAN signal-inn-space compliance for accuracy, integrity, availability and continuity.

2.70 The point of contact (POC) for coordination related to GAGAN services from Member States was established. The nodal officer GAGAN, GM (GAGAN), India shall coordinate through POC for further feasibility studies and feedback from the member States.

#### AIS Publication Coordination

2.71 Indonesia stated the need for an agreement between states (AIS Provider) for notification through the NOTAM regarding experimental flight vehicle activity undertaken by Indian Authorities involved in several FIRs in adjacent states including Jakarta FIR in Indonesia affecting international route. India explained the coordination procedures between States for the purpose of AIS Publication regarding airspace reservation activity which affect several FIRs.

2.72 Indonesia informed from the beginning of year 2014, NOF Indonesia will be delegated to Air Navigation Indonesia (AIR NAV Indonesia). Further information regarding delegation phases, organization structure and administration will be notified by Aeronautical Information Circular (AIC).

#### BOBCAT Operations Report:

2.73 Aero Thai presented a BOBCAT Operations Report highlighting current Afghanistan airspace, flight level availability, separation and spacing in Kabul FIR, traffic trends and average delay. It was also informed that more than 90% of flights operating during nights and taking slots from BOBCAT get same or better preferred levels. Aero Thai is studying Delhi FIR traffic sample data for December 2012 in coordination with MAAR for proposed daytime BOBCAT Slot requirement at Waypoint- SAMAR during time 0700 – 1100UTC at least at FL320 for all westbound flights.

Observation by IATA and ICAO :

2.74 Mr. Len Wicks regional Officer (ATM) made following proposals for the consideration of the BOBASIO group:

- a) The agenda for the BOBASIO meeting should be more robust and structured, adopted in line with the SAIOACG meeting;
- b) BOBASIO meeting may consider including action items under the task-list for monitoring and follow up the progress. This will allow for evaluating the measurable outcome(s).
- c) The BOBASIO meeting may consider election of Chairperson and Secretary for BOBASIO meetings and their continuity for two years so that action items could be tracked.
- d) The Member States other than India may also consider hosting the meetings for better participation and greater involvement.
- e) The meeting report may be submitted to ATM subgroup so that issues may further be discussed at ATMSG meeting.

2.75 IATA suggested that airports under BOBASIO states may also be invited to participate to share their experiences. The meeting agreed to discuss this proposal in next BOBASIO meeting.

2.76 Civil Aviation Authority of Bangladesh agreed to host BOBASIO meeting in Bangladesh in 2015. The meeting welcomed this initiative of Bangladesh. The meeting agreed that the next meeting would be held in 2014.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to

- a) note the information contained in this paper; and
- b) discuss any relevant matters as appropriate.

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**APPENDIX-A(1)**

**TASK LIST: BOBASIO/3**

Action Item ID	Description	Responsible State/ Organisation	Time Frame
3/1	BOBASIO States to study the Seamless ATM Plan and in accordance with the requirements outlined in the plan, review version 1.0 of the Asia/Pacific Seamless ATM Plan, utilize the regional plan to develop a State plan with implementation timelines for applicable Seamless ATM elements and also ensure that relevant decision-makers are briefed on the State Seamless ATM Plan, further, based on consultation, submit the first Regional Seamless ATM reporting form to the ICAO Regional Office by the 1 <sup>st</sup> March 2014.	Concerned States	1 <sup>st</sup> March, 2015
3/2	States to consider declaring airspace corresponding to its ATM capability and consider non-exclusive type of airspace classification, to allow for utilization of such airspace by aircraft not meeting the requirements.	BOBASIO States	30 <sup>th</sup> June, 2014
3/3	India to follow up the task of joint routes design with neighbouring States for mutual benefit.	India and neighbouring States	31 <sup>st</sup> March, 2014
3/4	India, Malaysia, Indonesia and other BOBASIO States to collaborate, to establish RNP 4 routes in the Bay of Bengal to support 30/30 NM separation.	India, Malaysia Indonesia and other BOBASIO States	30 <sup>th</sup> June, 2014
3/5	IATA to sensitize airline operators to equip aircraft with FANS/1A data link capability	IATA	TBD
3/6	Indonesia to provide details of the actual (not theoretical circular 200NM) range of ADS-B located in Banda-Aceh, so that the requirement of data sharing between Indonesia and India can be explored.	Indonesia	TBD
3/7	Malaysia and India to provide an update on possibility	Malaysia and	Feb, 2014

**APPENDIX-A(2)**

	of sharing of Port Blair ADS-B data with Malaysia and enable seamless transfer of communication at the FIR boundary for implementation of 50-50 NM separation, at the SAIOACG meeting in February 2014.	India	
3/8	All BOBASIO States to report occurrences of LLDs and LLEs to BOBASMA in timely manner. They should sensitize their controllers to report the occurrences of LLDs and LLE.	States obliged to submit data to BOBASMA	Ad infinitum
3/9	Indonesia to issue an Aeronautical Information Circular (AIC) as soon as possible to alert aircraft operators of their intention to issue an ADS-B mandate in 2016 or any later year, with a suitable prescribed lead time.	Indonesia	TBD
3/10	Mumbai OCC to submit a study on traffic pattern to/from AFI regions in terms of time of operation and density to facilitate the evaluation of the FLAS and its review.	India	15 <sup>th</sup> Nov, 2013
3/11	Mumbai to conduct a sensitization programme for OCC controllers, with an emphasis on employing FLAS as a last resort for level allocation and avoiding its adoption as a routine tool.	India	31 <sup>st</sup> October 2013
3/12	AAI to conduct a study on performance of HF in Arabian Sea airspace and submit its findings to pertinent adjacent FIR Controlling authority for optimization.	India	31 <sup>st</sup> March, 2014
3/13	To ensure required level of position reporting by Kenya Airways and flight crew of other AFI region based airlines, ICAO EASAF Office shall coordinate with concerned airlines. These airlines to be sensitized regarding significance, safety and regulatory provisions of establishing and maintaining listening watch on appropriate frequency and timely position reporting to ATC e.g. The flight crew of aircraft operating from AFI region and subsequently entering in Mumbai FIR to be reminded of the requirement to contact Mumbai FIC at least 10 minutes before crossing Mumbai - Mogadishu/Seychelles FIR boundary	ICAO Nairobi Office  Mogadishu Seychelles FIR Controlling ANSPs  IATA	ASAP  And before 31 <sup>st</sup> December, 2013.
3/14	LOA between Kolkata ACC and Yangon ACC to be signed by Appropriate Authority of Yangon and sent to Airports Authority of India.	Yangon	31 <sup>st</sup> December, 2013
3/15	Draft agreement on sharing of ADS-B data to be exchanged between India and Myanmar.	India and Yangon	31 <sup>st</sup> March, 2014
3/16	Coordination Procedures between Chennai OCC and Kuala Lumpur ACC to be signed by the appropriate authorities of Malaysia and India.	India and Malaysia	31 <sup>st</sup> December, 2013

**APPENDIX-A(3)**



3/17	LOA/Coordination Procedures for AIDC data exchange between Chennai and Kuala Lumpur to be finalized	India and Malaysia	31 <sup>st</sup> March, 2014
3/18	Development of ATM Contingency Plan Level 2/3 (Note: ATMTF meeting scheduled in the 3 <sup>rd</sup> week of Nov, 2013 and is being attended by India)	BOBASIO States	31 <sup>st</sup> December, 2013
3/19	Neighbouring States to expedite execution of SAR agreement(s), providing details of the responsibility of States and their agencies, especially in Cross Border Areas.	BOBASIO States	31 <sup>st</sup> December, 2013
3/20	BOBASIO States which are planning A-CDM to ensure the "Business Rules"; terminology and procedures were aligned regionally to ensure that user interfaces with various A-CDM systems are common.	BOBASIO States	31 <sup>st</sup> March, 2014
3/21	Neighboring Centers adjacent India to share their plan with India for AIDC implementation in a time bound manner.	Neighbouring BOBASIO States to India	31 <sup>st</sup> March, 2014
3/22	ICAO to standardize single ICD version within APAC region and all the regions of ICAO to achieve harmonious implementation.	ICAO Regional Office	31 <sup>st</sup> March, 2014
3/23	India to coordinate through POC for further feasibility studies on GAGAN and feedback from the member States.	India	31 <sup>st</sup> March, 2014
3/24	A more robust Agenda of BOBASIO in line with the SAIOACG meeting is to be finalized based on a structured approach	BOBASIO/4	TBD
3/25	The BOBASIO meeting to consider election of Chairperson and Secretary for BOBASIO meetings and their continuity for two years so that action items could be meticulously and purposefully tracked	BOBASIO/4	TBD
3/26	The Member States other than India to consider hosting the meetings for better participation and greater involvement	All BOBASIO States	As and when proposed
3/27	The meeting report to be submitted to ATM subgroup so that issues may further be discussed at ATMSG meeting.	Regional officer ATM, APAC	12 <sup>th</sup> November, 2013
3/28	Indonesia and India to evaluate the draft Letter of Coordination Agreement LOCA regarding airspace reservation for rocket launching activity for approval and signing.	Indonesia and India	TBD