

INTERNATIONAL CIVIL AVIATION ORGANIZATION



**REPORT OF THE FOURTH MEETING OF THE BAY OF BENGAL TRAFFIC
FLOW REVIEW GROUP (BOBTFRG/4)**

VIDEO TELECONFERENCE, 6 – 8 DECEMBER 2022

The views expressed in this Report should be taken as those of the
Meeting and not the Organization

Approved by the Meeting
and published by the ICAO Asia and Pacific Office, Bangkok

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INTRODUCTION

Meeting

1.1 The Fourth Meeting of the Bay of Bengal Traffic Flow Review Group (BOBTFRG/4) was held as a Video Teleconference (VTC), from 6 to 8 December 2022.

Attendance

2.1 The meeting was attended by 72 participants from Bangladesh, India, Indonesia, Malaysia, Pakistan, Singapore, Sri Lanka, Thailand, United States of America, IATA, IFATCA and ICAO.

2.2 A list of participants is appended at **Appendix A** to this report.

Officers and Regional Office

3.1 Mr. K. Vasudevan, Executive Director – ATM, Directorate of Air Space Management, Airports Authority of India presided over the meeting throughout its duration as Chair of BOBTFRG.

3.2 Ms. Sunok Lee, Regional Officer, Air Traffic Management (ATM) and Mr. Xu Zhi Feng Regional Officer, ATM, ICAO Asia and Pacific Regional Sub-Office were the Secretaries for the meeting.

Opening of the Meeting

4.1 Mr. K. Vasudevan welcomed the participants to the meeting.

4.2 On behalf of Mr. Tao Ma, Regional Director of ICAO Asia and Pacific Office, Ms. Sunok Lee also welcomed participants to the meeting.

Documentation and Working Language

5.1 The working language of the meeting and all documentation was English. There were nine Working Papers (WP), one Information Paper (IP) considered by the meeting.

5.2 A list of papers is included at **Appendix B** to this report.

Draft Conclusions, Draft Decisions and Decisions of BOBTFRG – Definition

6.1 BOBTFRG recorded their actions in the form of Draft Conclusions, Draft Decisions and Decisions within the following definitions:

- a) **Draft Conclusions** deal with matters that, according to APANPIRG terms of reference, require the attention of States, or action by the ICAO in accordance with established procedures;
- b) **Draft Decisions** deal with the matters of concern only to APANPIRG and its contributory bodies; and
- c) **Decisions** of BOBTFRG that related solely to matters dealing with the internal working arrangements of these bodies.

List of Decisions and Draft Conclusions/Decisions

7.1 List of Draft Conclusions/Draft Decisions

Draft Decision BOBTFRG/4-1: Bay of Bengal Route Network Small Working Group	
<p>What: that:</p> <p>That, noting the objectives and the tasks under the BOBTFRG, to identify current CNS/ATM capabilities and CNS/ATM requirements to optimize the airspace to support the most efficient horizontal separations to be utilized, taking into account aircraft approval status and the new CNS/ATM capabilities, Small Working Group to be formed to draft the trial implementation of PBCS with ADS-C/CPDLC mandate by defining the action items including all BOB member States and IATA, such as:</p> <ul style="list-style-type: none"> a) identify constraints and the CNS/ATM capabilities that are needed to implement the performance-based separation for 20 NM longitudinal separation over Category S airspace, 30 NM longitudinal separation over Category R airspace with support PBCS requirements; b) define the timelines, milestones and dependencies for actions that should be followed; c) firm up with the mandate date for the ADS-C/CPDLC, which was identified as the key enabler for airspace enhancement; d) draft the trial implementation plan for the PBCS over the Bay of Bengal area including the phased detailed action plans, considering below: <ul style="list-style-type: none"> • Phase 1– 50 NM longitudinal separation to be applied based on the current capability RNAV 10 (RNP 10) available as soon as possible; • Phase 2 – to start transitional period: trial implementation of 30 NM longitudinal / 23 NM lateral separation with harmonized ADS-C/CPDLC equipage mandate for RNP 4 or RNP 2, RCP 240, RSP 180 requirements allowing non-equipped aircraft, taking account into: <ul style="list-style-type: none"> ▪ 70% of fleet equipage rate to start trial implementation 	<p>Expected impact:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Political / Global <input type="checkbox"/> Inter-regional <input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input checked="" type="checkbox"/> Ops/Technical

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<ul style="list-style-type: none"> ▪ with the target ADS-C/CPDLC mandate date on not later than 1 March 2024; ▪ within 24-month transitional period (lead time for operators' equipage readiness) to give operational priority to equipped aircraft allowing non-equipped aircraft, based on the necessary conditions such as at a specific flight level band, at a certain ATS routes and at a certain time band to be defined through discussion in the Small Working Group. ▪ Post-op evaluation on Phase 2 after the minimum of 12 months, depending on the progress by each State <ul style="list-style-type: none"> • Phase 3 – permanent implementation of 30 NM longitudinal / 23 NM lateral separation PBCS supports not later than 1 March 2026, subject to post-op evaluation on Phase 2 and ANSP' readiness to give flexibility or earlier implementation. <p>report the draft Trial Implementation Plans including the above to the SAIOSEACG/2 for its adoption to be reported to ATM SG/11 (2023).</p>	
<p>Why: To enhance airspace capacity and efficiency over the Bay of Bengal area with PBCS support to fulfil the objectives of the BOBTFRG.</p>	<p>Follow-up: <input checked="" type="checkbox"/>Required from States</p>
<p>When: 7-Dec-22</p>	<p>Status: Adopted by Subgroup</p>
<p>Who: <input checked="" type="checkbox"/>Sub groups <input checked="" type="checkbox"/>APAC States <input type="checkbox"/>ICAO APAC RO <input type="checkbox"/>ICAO HQ <input checked="" type="checkbox"/>Other: ICAO APAC RSO</p>	

7.2 List of Decisions

Nil

REPORT ON AGENDA ITEMS

Agenda Item 1: Adoption of Agenda

Adoption of Agenda

1.1 The Agenda (WP/01) was adopted by the meeting, which noted the Provisional Order of Discussion (OOD) and the Provisional List of Working and Information Papers (IP/01).

Agenda Item 2: Updates from States and IATA on ADS-C/CPDLC and PBCS Implementation Status

Malaysia's Initiative to Improve Air Traffic Services in The Bay of Bengal Area (WP/02)

2.1 WP/02 presents Malaysia's initiative to improve Air Traffic Services in the Bay of Bengal area including its capabilities and plan to enhance air traffic management in response to the growth of air traffic movement.

2.2 Stressing the substantial increase from the post-pandemic recovery, Malaysia provided a status update on the Performance-Based Communication and Surveillance (PBCS) capability and readiness in Kuala Lumpur FIR. As evidenced by the measurement against performance criteria, Malaysia's automation system complied with the PBCS requirement for communication capability defined by an RCP standard and surveillance capability defined by an RSP standard.

2.3 The meeting noted that 50 NM separation between Malaysia and India for aircraft equipped with ADS-C/CPDLC in the Bay of Bengal (BOB) area had been implemented since 2014 providing airspace users with better efficiency, capacity and benefits of optimum flight level allocation and reduced ground delay.

2.4 With Malaysia's readiness and advanced capabilities in ATM Automation System and the satisfied performance criteria requirements in RCP240 and RSP 180, Malaysia would immediately implement 50 NM Performance-based separation over the BOB area to fully utilize the usage of PBCS separation, and further reduce the longitudinal separation minimum to 30 NM/5 minutes as well as lateral separation minimum to 23 NM for the next step within the Malaysia's State action plan where level optimization would directly contribute to fuel optimization and CO2 emission reduction.

2.5 Malaysia indicated its willingness to engage with other stakeholders to discuss the necessary works to be materialised such as thorough arrangements and evaluation, safety risk assessment, development of local procedures, flight planning matters and training simulations.

2.6 ICAO encouraged Malaysia to keep progressing with the more efficient PBCS separation minima application as the BOB area was identified as a high priority area in the APAC Seamless ANS Plan lacking efficiency and capacity, which need to be rectified with such capability from ground or space-based solutions due to traffic density, weather deviations and contingency responses.

CNS/ATM Infrastructure in Chennai FIR for BOB Traffic Management (WP/03)

2.7 The meeting noted India's efforts in improving the CNS/ATM infrastructure built-up to accommodate the anticipated growth in air-traffic in Chennai and adjoining FIRs of APAC region.

2.8 From its experience in utilising the period of COVID-19, India provided an insight to the existing facilities to support the Air-traffic management in the oceanic region of Bay of Bengal in terms

of Communication & Surveillance facilities and the futuristic plan to meet the demands of the growing air traffic for an enhanced capacity and improved efficiency as follows:

- **Ground-based ADS-B** data from Port Blair and Campbell Bay sensors intergrated into the ATM Automaiton units at Chennai and from Port Blair sensor at Kolkata ACCs;
- **Space-based ASD-B** data integreated into the Automation Systems at Chennai, Mumbai and Kolkata ACCs opeing the new surveillance environment in India Airspace, almost zero surveillance gap over the Indian oceanic airspace;
- **PBSC (RSP180 / RCP 240)**: Chennai ATM Automaion system is being upgraded to comply with PBCS (RSP 180 / PCP 240) considering implementation of PBCS designated routes of reduced separation sttndards over the oceanic region;
- **VHF RCAG SYSTEMS**: Offset carrier VHF system installed at Chennai-Vizag-Port Blair and Kolkata-Vizag-Port Blair sectors enhancing the VHF coverage for two important ATS routes;
- **AIDC** established with Chennai-Kuala Lumpur, Chennai-Maldives in the oceanic region, and Chennai-Yangon, Chennai-Colombo in the compatibility testing stage;
- **HF Radio** receivers recently networked to eliminate unserviceability due to the fading effect by achieving greater space and frequency diversity.

2.9 In regards to PBCS implementation, which requires collaboration among stakeholders including the member States of adjoining FIRs to realize the seamless traffic flow, India proposed to organise a meeting of all stakeholders to discuss various possibilities and implement a collaborative air traffic management for enhanced capacity of air traffic flow by leveraging the infrastructure augmentation in India.

2.10 Thailand, on behalf of the Monitoring Agency for Asia Region (MAAR), appreciated India's efforts to enhance capabilities and cooperation with neighboring States, which significantly contributed to the mitigation of the Large Height Deviation (LHD) in both occurrence frequency and duration in this sub-region.

2.11 Malaysia indicated its intention to cooperate with India to harmonise the PBCS implementation for further reduced separation. In response to a query from Malaysia on India's action plans for the PBCS implementation and the targeted separation reduction, India would decide through discussion in collaboration and consultation with all stakeholders concerned for the streamlined and harmonized implementation in this region.

2.12 IATA and ICAO thanked India for its proactive initiative to improve the CNS/ATM capabilities to enhance airspace efficiency, in response to India's willingness to organise a meeting for PBCS implementation, ICAO invited India to be a lead State of Small Working Group to discuss and draft a plan of the Bay of Bengal (BOB) Route Network for implementation of performance-based separation as proposed in WP/09.

Agenda Item 3: Updates from States on the Implementation of Improved Horizontal Separation Standards

3.1 None

Agenda Item 4: Discussion on PBN Routes Development

Review of Selected ATS Route Proposals from the Asia/Pacific Region ATS Route Catalogue (WP/04)

4.1 ICAO presented selected ATS route proposals from the most recent Draft Version 21.2 of the *Asia/Pacific Region ATS Route Catalogue for review and update (Attachment F)*.

4.2 The meeting was asked to review and classify each ATS route proposal as:

- Priority A – short term i.e. it could be implemented within 12 months;
- Priority B – medium term i.e. it could be implemented within 13 to 36 months;
- Priority C – long term i.e. more than 36 months; or
- Priority D – cannot be implemented (reasons to be provided).

4.3 Feedback from the States and IATA was as follows:

- HIMALAYA 02
 - IATA commented that since stakeholders had many limitations on this proposal, any possible solutions from relevant States would be grateful.
 - Noting that the upgradation of Bangladesh's CNS/ATM system with full coverage of communication and surveillance in Dhaka FIR would be available by the end of 2024, so taking consideration of China's counter-proposal, Bangladesh proposed two route options as below:
 - Kathmandu (KTM)- Saidpur (SDP)-SYT-LSO or,
 - Kathmandu (KTM)- Saidpur (SDP)-SYT- Imphal (IIM)-LSO.
 - India commented that further meaningful discussion of this proposal should be based on the basic agreement between China and Myanmar.
- IND 07 (N877 Extension)
 - Pakistan reaffirmed that the proposed route was not feasible and supported archiving this proposal for future possibility, and IATA had no objection.
- BOB 01
 - Bangladesh informed the meeting that the consultation with the military authority was still under process. To avoid the Danger area, two more alternative options are proposed with a connection to the new DVOR (Cox's Bazar, CXB), which would be available shortly, detailed as follow:
 - DOPID-Cox's Bazar (CXB DVOR)-MDY or,
 - TATUX-Cox's Bazar (CXB DVOR)-MDY
 - In response to Bangladesh's counterproposal, IATA suggested specifying a new waypoint at the position of Cox's Bazar instead of waiting for the availability of the new DVOR and proposed the following route connecting Cox Bazar-APAGO-CHILA and onwards joining ATS Route A599:
 - TATUX-DOPID-Cox's Bazar -APAGO-CHILA-A599- LSO-LINSO
- BOB 02
 - Considering the complexity and constraints in the area, Bangladesh and India

wanted to focus on Bangladesh's counter-proposes for BOB 01 in the first place.

- AFG 01
 - Pakistan affirmed that airway T400 starting from point SULOM (TOC with India) - INDEK – NONIB – PS - BIMIS was already operational and available for flights at this stage after being approved by the relevant government authorities. Further connectivity to BIMIS (TOC with Afghanistan) was subject to the response from Afghanistan.
- MID 02 (a)
- Pakistan reaffirmed that the proposed route was not feasible and supported archiving this proposal for future possibility and IATA had no objection.

4.4 ICAO informed the meeting that the proposals with no progress for more than 5 years as per the management protocol of the APAC ATS Route Catalogue would be reshuffled to be archived for future discussion or deletion from the list in consultation with relevant States and IATA.

4.5 The meeting noted the location of Danger Areas, VGD 32 and VGD 34 in Kolkata FIR but NOTAMs and AIP-publication had been conducted by Bangladesh. ICAO re-emphasized that it had been recorded as APANPIRG ANS Deficiencies for both Bangladesh and India and urged both States to plan and report corrective actions to address this non-compliance against Annex 15 to the upcoming ATM SG/11 meeting in 2023.

4.6 India intimated that there was no such deficiency mentioned in APANPIRG/33 report regarding VGD32 and VGD34. ICAO clarified that it had been recorded as an ANS deficiency since 2019, when it was first proposed and recorded by ATM SG/7 and APNPIRG/30. The full list of ATM and Airspace Safety Deficiency List is available in APANPIRG/33 Report, Appendix A to AI 4.

Agenda Item 5: Review of BOBTFRG Task List

BOBTFRG Task List (WP/05)

5.1 ICAO presented WP/05, which contained the BOBTFRG Terms of Reference for review and the BOBTFRG Task List for updating.

5.2 Reminding the meeting of that most of the action items in the BOBTFRG Task List were very overlapping with the BOBTFRG Priority Areas Implementation Timelines (Attachment A to the WP/09), ICAO suggested the Task List to be streamlined to keep only very actionable and rather short-term items that require follow-up actions and the meeting agreed.

5.3 The BOBTFRG Task List, as updated by the meeting is appended at **Appendix D** to this report.

Side Meeting between India and Malaysia

Withdrawal of B466 (Action Item 3/3 of the BOBTFRG Task List)

5.4 Malaysia informed that the query regarding the non-PBN aircraft flying on PBN route was answered by ICAO APAC office. Malaysia requested some time to study on the removal of B466 portion in Kuala Lumpur FIR. Malaysia acknowledged and would study India's suggestion to realign B466 on N571 so that the segment in Chennai FIR can be deleted. Malaysia would provide feedback during bi-lateral meeting with India.

N877 (Action Item 2/18 of the BOBTFRG Task List)

5.5 Malaysia updated India regarding the progress made for action item 2/18. Outcomes from Safety Risk Assessment (SRA) required lower-level transfer of aircraft arrival to VTSP. Joint SRA between Malaysia and India would be required subject to the agreement from India. India would evaluate the mitigation measures identified by CAAM and confirm the proposed date for bi-lateral meeting regarding the level restriction by 1st week of January 2023. Technical discussion regarding AIDC would be proposed by Malaysia. India agreed to the suggestion.

Agenda Item 6: Any Other Business

Progress of User-Preferred Route (UPR) Implementation in Indonesia (WP/06)

6.1 Taking advantage of low traffic level owing to the COVID-19 and having a strong collaboration with all stakeholders, Indonesia had successfully implemented a User-Preferred Route trial operation based on the FREE ROUTE concept, where airspace users could freely plan a route between a defined entry point and a defined exit point, with the possibility to route via intermediate waypoints without referring to the Air Traffic Services (ATS) route network.

6.2 After a series of preparation work containing procedures design, safety assessment, personnel training, etc. and consultation with airspace users (IATA), The initial phase of the UPR trial implementation began in June 2020 by NOTAM allowing stakeholders to adapt to the new requirements. Taking into account feedback and preferable needs from various stakeholders, the UPR utilization with the gradual processes was continually evolving through the evaluations and optimizations after each phase.

6.3 As per two evaluations after the phase 1 and 2, to meet the users' needs reflecting the airline's operational preference especially on the dynamic weather or wind conditions, the third phase of UPR Trial Operation was commenced in May 2022 and published by AIP Supplement, as summarized in **Table 1**.

PARAMETER	PROCEDURES
Users	International flight
Level	F310 - F600
Entry and Exit	<ul style="list-style-type: none"> ▪ Published Waypoint ▪ Designated point (latitude/longitude)
Intermediary point	<ul style="list-style-type: none"> ▪ Published Waypoint (include navaid & ATS route) ▪ Designated point (latitude/longitude)
Proposal submission procedures	<ul style="list-style-type: none"> ▪ At least 3 hours before EOBT; ▪ Responded by AirNav within 2 hours after submission
Usage	Eva Air (EVA) regularly: more than 60 flights Hongkong Express

Table 1: Indonesia UPR Trial Procedures – Phase 3

6.4 Indonesia informed the meeting that there were some positive feedback from airspace users and the evaluation on the third phase in 11 November 2022 showed UPR's benefic on environmental protection, with a reduction of 94.5 tons of carbon emissions in 2022.

6.5 With Indonesia's confidence to fully implement UPR since 2020, the 4th phase of UPR Trail Operation was to be published in the AIP Supplement on 15th December 2022 without time

limitation in flight planning requirement for aircraft to submit UPR proposal, with a plan to commence the full UPR operation at Q3 2023, subsequently after evaluation of the 4th trial phase.

6.6 Indonesia would share the future evaluation on post-operation and impacts after the traffic returned to the pre-pandemic level including domestic and international flights in the UPR operations.

6.7 ICAO congratulated Indonesia on their excellent and exemplary work in the UPR trial operation adding UPR concept should be discussed in tandem with performance-based separation implementation to optimise the airspace efficiency in a more effective and holistic approach.

6.8 Singapore also congratulated Indonesia on the successful UPR trials and informed the meeting that it was implementing Direct Routing Operation (DRO) within its FIR in phases, which was a similar airspace enhancement initiative that was a stepping block towards achieving Free Route Airspace Concept. Singapore proposed that given the several long-haul traffic that traverse Singapore and Jakarta FIR, Singapore saw the possibility of exploring cross-border collaborations with Indonesia on such similar initiatives. Malaysia also supported the good work by Indonesia and showed its intention for the UPR implementation in the future looking at collaboration with neighbour States. Malaysia would first analyse and evaluate the implementation of the UPR within Malaysian airspace.

6.9 Thanking for Indonesia's efforts and successful roll-out of UPR implementation, IATA invited other States to take a good opportunity of the COVID-19 downturns to implement UPR or other possible airspace enhancements taking reference of step-by-step approach by Indonesia. IATA also would like to work with any State that had plans to implement UPR or Free Route Airspace Concept.

6.10 Although the UPR implementation in Indonesia was for the continental airspace only, ICAO encouraged States to initiate the discussion in an attempt to find some room for improvement if that is beneficiary for airspace users.

Bay of Bengal Flight Level Allocation Scheme Chart (WP/07)

6.11 ICAO presented the Bay of Bengal Flight Level Allocation Scheme (FLAS) Chart (**Figure 1**), which was updated based on the data submitted by Bangladesh, India, Indonesia, Malaysia, and Thailand.

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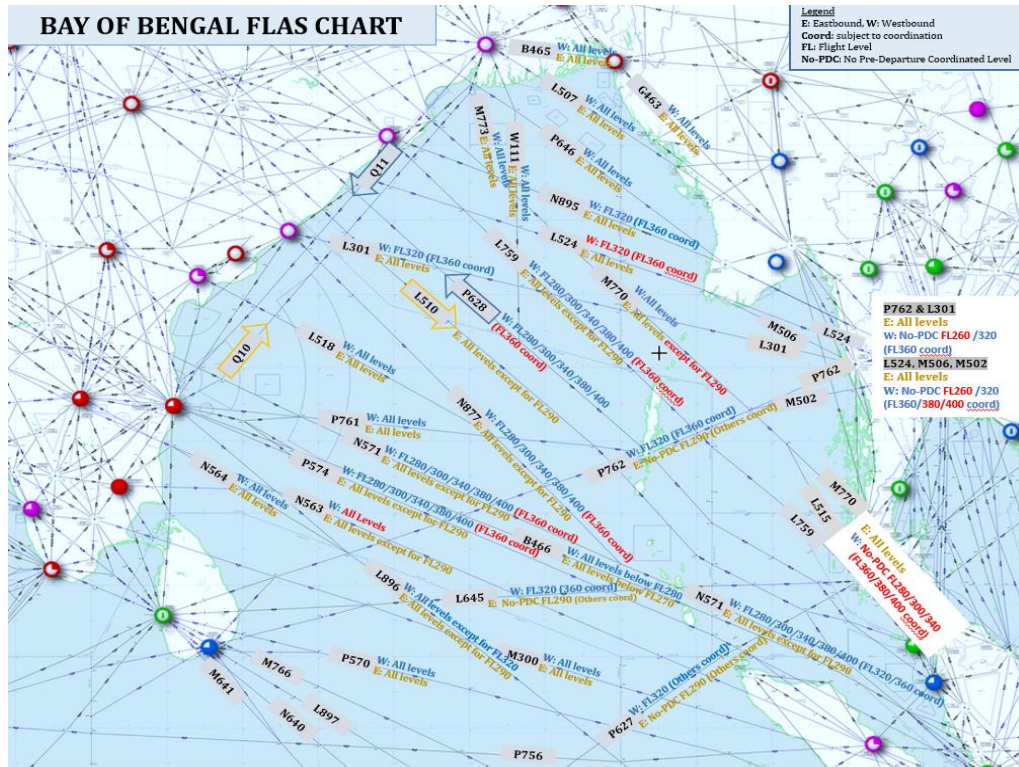


Figure 1: Bay of Bengal FLAS Chart

6.12 The Bay of Bengal FLAS Chart was to provide an overview of the position of ATS routes in the Bay of Bengal, including the FLAS allocated to each ATS route. The BOBTFRG could consider using the chart when conducting the review of FLAS, to enhance the efficiency of air traffic in the Bay of Bengal airspace (BOBTFRG Terms of Reference referred).

6.13 States and IATA provided their updates and feedback to the newly updated FLAS Chart and exchanged views and mutual understanding on various operational constraints and incapacibilities of infrastructure in relation to FLAS operations over the BOB oceanic airspace.

6.14 In response to an inquiry from ICAO regarding the optimization of FLAS operation with enhanced CNS/ATM capability, India pointed out the major constrain in the area was unreliable communication between Kolkata and Yangon FIRs due to disruption of network, and the FLAS needed to be retained unless further improvement had been made.

6.15 IATA suggested the meeting consider taking reference from the FLAS withdrawal trial in the Arabian Sea with a step-by-step approach and form a transition plan for FLAS optimization taking into account the ADS-C/CPDLC mandate timeline to ensure better-equipped aircraft were less affected by FLAS.

6.16 As requested by Thailand, India agreed to investigate the possibility of including FL280 for ATS Routes L301, L524, M506, and N895 with support from IATA. India requested Thailand to provide a time period when additional flight level are necessary. Thailand in turn requested IATA to help in analysis of traffic.

6.17 ICAO urged the meeting to review the current FLAS operations and plan for improved FLAS to enhance airspace efficiency over the BOB airspace to fulfill the tasks by BOBTFRG Terms of Reference with the reference to the Asia/Pacific Region Seamless ANS Plan and expected traffic returns from COVID-19.

6.18 Reminding the meeting of that the chart is a living document that requires regular updating to keep current with the latest Letter of Agreement (LOA) amongst the concerned FIRs. ICAO urged States concerned to continue to review and provide update to ICAO Secretariat, via email to Zxuu@icao.int and Slee@icao.int.

Congestion in the BOB and IATA Survey Data (WP/08)

6.19 IATA provided information on options for reducing separation standards in the Bay of Bengal and supporting PBCS non-exclusive mandate trials based on the airline equipage and capability data inviting the meeting to prioritise implementation of the most efficient standards according to demonstrated performance capabilities.

6.20 Noting the congestion and delays already being created from the recovery from the COVID-19, an example of current inefficiency over the BOB area was illustrated in **Figure 2**, that the flights departing Singapore and Kuala Lumpur that have similar ETDs were required to plan on longer (non-optimal) routes for the delay to achieve the required procedural separation, resulting in missing destination slots and onward connections affecting almost half of their nightly flights to Europe, and approximately 271 tons of additional fuel and 850 tons of extra CO2 emissions per year.

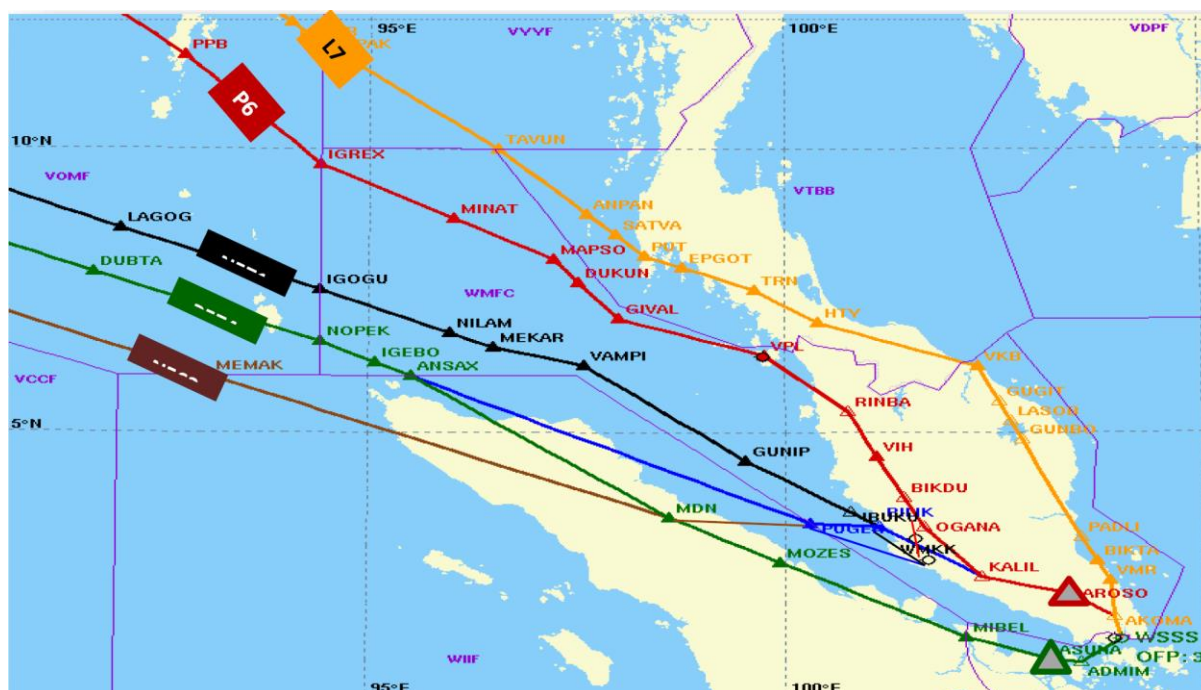


Figure 2: Example of inefficiency over the Bay of Bengal area

6.21 Highlighting the ICAO separation standards in controlled airspace are determined by the technology available and the capabilities of ATC and the aircraft, as well as the performance expectations in the ICAO APAC Seamless ANS Plan V3.0, it was pointed out that despite the currently available capabilities, some States were still applying larger standards than available, contributing to the growing congestion in the BOB area. Hence all States was requested to prioritize implementing the most efficient standards according to capabilities before congestion in the region grows further.

6.22 IATA also presented the progress analysis of airline responses to IATA's Aircraft Equipage and Capability Survey for the IATA Asia-Pacific and North Asia regions (ICAO APAC region) conducted in Quarters 1 and 2 of 2022 and which is ongoing (refer to ATM SG/10 [IP/06](#) – IATA Equipage and Capability Survey for more details).

6.23 The survey results showed for the region a large majority of the fleets of their member airlines that responded reported capability and regulatory approval to operate under PBCS. Most also

reported PBN capability of RNP4 or better.

6.24 IATA informed the meeting that it had already been working with Malaysia to combine further traffic data and refine the analysis to demonstrate equipage and capability that supports immediate moves towards implementation of more efficient standards under PBCS. Also IATA indicated its availability to work with other States to conduct similar refined analysis if required to assist in finalising a date for the PBCS mandate trial.

6.25 **Figure 3** illustrating equipage analysis for April 2022 air traffic on Oceanic airways clearly indicates higher percentage of air traffic with ADS-C/CPDLC equipage.

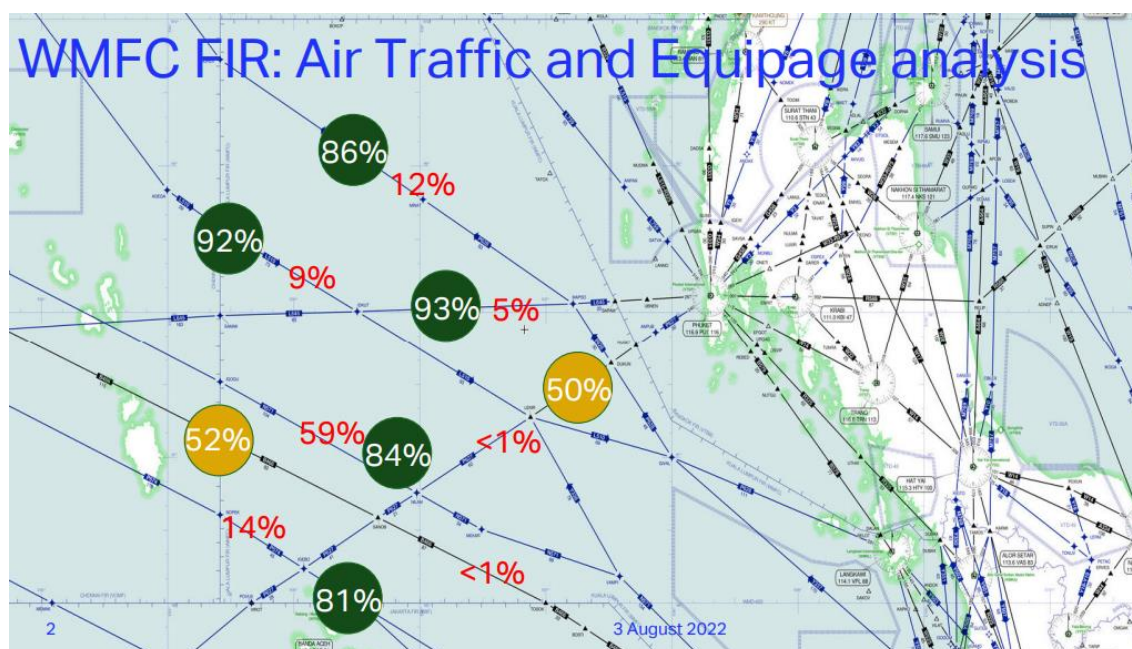


Figure 3: Air Traffic and Equipage analysis in WMFC FIR

6.26 IATA reiterated its support for the PBCS mandate trial in the Bay of Bengal (and adjoining areas where relevant) taking reference to the NOPAC Route System and appealed to States concerned to prioritise the implementation of most efficient separation standards according to demonstrated performance capabilities as applicable as possible.

6.27 Singapore thanked IATA for the analysis and added that it was supportive of such efforts to enhance air traffic management efficiency by optimising airspace capacity on the route network across the Bay of Bengal airspace. Singapore offered to work with IATA should IATA require further data on this work.

6.28 Singapore highlighted that in addition to working on reducing separation using PBCS, ATFM should still be considered given the possible benefits it can bring about in optimising airspace utilisation by allowing visibility of available capacity to airspace users. Singapore is prepared to work with Thailand and the rest of the affected States to discuss how ATFM can help to achieve the enhancement of air traffic management.

6.29 Singapore also clarified that it does not impose any requirements on route selection if the ETD of 2 or more flights is less than 15 minutes. The selection of routes would be done by the airlines.

6.30 Malaysia thanked for IATA' collaborative work in combining the traffic data and the fleet equipage analysis as shown above and would work with India including other neighbouring States to implement and promote PBCS.

6.31 The meeting noted the beneficial roles and functions by ATFM measures to ease the delay and the traffic congestion. Thailand also briefed the meeting how BOBCAT rules were being applied

for the traffic toward Afghanistan airspace.

6.32 With respect to discrepancies in fleet equipage data from IATA and some States such as India, ICAO elaborated the reason behind, that some aircraft do not activate the function despite the capability available. So, the meeting recognised and reconfirmed that the mandate is the key to increase the fleet equipage rate for smaller separation application to enhance airspace capacity and efficiency.

6.33 To foster the operators' equipage, as suggested by the Chair and IATA, more specific PBCS operational approval process could be discussed as one of the key subjects when taking into consideration the regulatory aspects in the PBCS trial implementation planning.

6.34 In response to a request by ICAO, IATA agreed to encourage and promote its member airlines including other airlines flying over the BOB airspace to file an operational approval to respective authority, so that ANSP's ATM automation system could process the PBCS indicators in the flight plan and speed up the operators' equipage rate as the traffic returns were quite faster than expected.

Review of BOBTFRG Priority Areas Implementation Timelines (WP/09)

6.35 ICAO reminded the meeting of that The BOBTFRG Priority Areas 1 and 2 were developed and agreed at the Second Meeting of the Bay of Bengal Traffic Flow Review Group (BOBTFRG/2, Bangkok, Thailand, 08 – 10 October 2019). The BOBTFRG/3 (VTC, 14 -15 December 2022) agreed to update the implementation timelines for each priority to reflect the changed factors by COVID-19.

6.36 The meeting was invited to note the Performance Expectations in the *Asia/Pacific Seamless ANS Plan*, and recalled PBCS implementation provisions of ICAO Annexes 6 and 11, Doc 4444 PANS-ATM and Guidance Material.

6.37 Highlighting that the ADS-C and CDPLC were identified as the most needed to support performance-based separations and to enhance the efficiency in the Bay of Bengal. ICAO reminded the meeting that as ADS-C/CPDLC mandate being deferred from the planned date, 1 January 2023 due to huge impact by COVID-19 as per IATA's request, it was agreed at the SAIOSEACG/1 that States concerned and IATA would report the analysis result on their readiness in areas such as fleet equipage in ADS-C/CPDLC, RNP 10, RNP 4 and RNP 2, ATM automation system including the expected timelines of PBCS implementation following the long discussion at the BOBTFRG/3 meeting in 2021.

6.38 Hence, prior to this meeting, as requested by ICAO, the relative data and analysis results were collected from Bangladesh, India, Indonesia, Malaysia, Myanmar, Pakistan, Sri Lanka, and Thailand, and provided in Attachment B to the WP/09 to facilitate the discussion.

6.39 India suggested APAC to consider adoption of FAA FPL indicator requirement of RNP 2 (M1 & M2).

6.40 Given the urgent need to ensure the most efficient ATM systems to support the recovery of the aviation industry after severe financial losses during the COVID-19 and the benefits that performance-based separation would bring, ICAO urged all BOB States and IATA to step forward to firming up a timeline for mandating ADS-C/CPDLC including the affordable transitional period for un-equipped aircraft.

6.41 To ensure both Air Navigation Service Providers (ANSPs) and airspace users are ready and capable of PBCS and to develop a more detailed plan with feasible implementation timelines for all concerned Stakeholders including flight level band, forming a Small Working Group/focus group, consisting of experts and participants from States concerned and IATA, was proposed as a good way to progress more effectively.

6.42 As agreed at the BOBTFRG/3, taking reference to the NOPAC Route System ([see more details](#)), ICAO provided its suggestion for the phased trial implementation of PBCS requiring ADS-C/CPDLC mandate, which was identified as the key enabler to support performance-based separations and enhance the efficiency in the Bay of Bengal. In response, the meeting carried out hours-long discussion to look at how to realise it to fulfil the objective and the tasks under the BOBTFRG.

6.43 Considering the analysis results by IATA on fleet equipage of traffic over the Category R airspace in BOB area, it was agreed by the meeting as the **Draft Decision BOBTFRG/4-1** as below:

Draft Decision BOBTFRG/4-1: Bay of Bengal Route Network Small Working Group

That, noting the objectives and the tasks under the BOBTFRG, to identify current CNS/ATM capabilities and CNS/ATM requirements to optimize the airspace to support the most efficient horizontal separations to be utilized, taking into account aircraft approval status and the new CNS/ATM capabilities, **Small Working Group** is to be formed to draft the trial implementation of PBCS with ADS-C/CPDLC mandate by defining the action items including all BOB member States and IATA, such as:

- e) identify constraints and the CNS/ATM capabilities that are needed to implement the performance-based separation for 20 NM longitudinal separation over Category S airspace, 30 NM longitudinal separation over Category R airspace with support PBCS requirements;
- f) define the timelines, milestones and dependencies for actions that should be followed;
- g) firm up with the mandate date for the ADS-C/CPDLC, which was identified as the key enabler for airspace enhancement;
- h) draft the trial implementation plan for the PBCS over the Bay of Bengal area including the phased detailed action plans, considering below:
 - **Phase 1**– 50 NM longitudinal separation to be applied based on the current capability RNAV 10 (RNP 10) available as soon as possible;
 - **Phase 2** – to start transitional period: trial implementation of 30 NM longitudinal / 23 NM lateral separation with harmonized ADS-C/CPDLC equipage mandate for RNP 4 or RNP 2, RCP 240, RSP 180 requirements allowing non-equipped aircraft, taking account into;
 - 70% of fleet equipage rate to start trial implementation
 - with the target ADS-C/CPDLC mandate date on not later than **1 March 2024**;
 - within **24 month transitional period (lead time for operators' equipage readiness)** to give operational priority to equipped aircraft allowing non-equipped aircraft, based on **the necessary conditions such as at a specific flight level band, at a certain ATS routes and at a certain time band to be defined through discussion in the Small Working Group.**
 - Post-op evaluation on Phase 2 after the minimum of 12 months, depending on the progress by each State
 - **Phase 3** – permanent implementation of 30 NM longitudinal / 23 NM lateral separation PBCS supports not later than **1 March 2026**, subject to post-op evaluation on Phase 2 and ANSP' readiness to give flexibility or earlier implementation.
- i) report the draft Trial Implementation Plans including the above to the SAIOSEACG/2 for its adoption to be reported to ATM SG/11 (2023).

6.44 As India being a lead State of the Small Working Group and with support from IATA,

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Report on Agenda Items

ICAO, all BOB member States and USA, the first kick-off meeting was scheduled on 10 January 2023 and States agreed to provide Points of Contact **not later than 23 December 2022** to be recorded in below table:

BOB Route Network Small Working Group		
State	Point of Contact	Remarks
Afghanistan		
Bangladesh	1. Mr. Mahmud Akhter Hossain, Assistant Director(ATM), (makhtercaab@gmail.com) 2. Mr. Baharul Hayat Bipul , Assistant Director (ATM)- Supervisor/OJTI, (baharulbipul@gmail.com)	
India	1. Mr. ASIT KUMAR SINHA , Joint GM(ATM-ASM), (asitsinha@aai.aero) 2. Mr. G. SAMBATH KUMAR, Joint GM(ATM), (sambathkumar@aai.aero)	Lead
Indonesia	1. Mr. Rino Laharto (rinolaharto.atc@gmail.com) 2. Mr. Nur Sa'id Eko Nugroho (ecko.atc@gmail.com)	
Malaysia	1. Director (A) ANS Technical Division - Mohd Fitri Bin Ishak (fitri@caam.gov.my) 2. Deputy Director ATM - Raja Amsyar Hillman Bin Raja Badrul Hisham (r.amsyarhillman@caam.gov.my)	
Myanmar	DCA-Myanmar_Aung Myint Thein	
Pakistan	Abdul Mannan, Deputy Director ATS, Pakistan Civil Aviation Authority, (mannan.mba@hotmail.com)	
Singapore	Choo Meijing, H(ATM-AP) (choo_meijing@caas.gov.sg)	
Sri Lanka	1. Mr. S.H.I. Bandupriya - Senior Manager ATC (Colombo ACC & TWR) from Air Navigation Service Provider Sri Lanka (banduatc.ans@airport.lk) 2. Mr.T P S Warnasinghe - Senior Civil Aviation Inspector ATM(OPS) from Civil Aviation Authority of Sri Lanka (scaiatmops@caa.lk)	
Thailand	1. Mr. Suvichan Sathitkitpichet (suvichan.st@aerothai.co.th) 2. Ms. Chananya Pinkaewprasert (chananpink@gmail.com)	
IATA	1. John Moore, Assistant Director, Safety & Flight Operations, ASPAC (moorej@iata.org) 2. Prashant Sanglikar, Assistant Director Safety (sanglikarp@iata.org)	
USA	Mr. Shayne Campbell, Senior Air Traffic Representative Asia Pacific FAA (shayne.a.campbell@faa.gov)	

Table 2: Points of Contact of the BOB Route Network Small Working Group

6.45 Once the detailed trial implementation plan was drafted by the Small Working Group, the plan was to be reported to the upcoming South Asia, Indian Ocean and Southeast Asia ATM Coordination Group (SAIOSEACG/2) to recommend ADS-C/CPDLC equipage mandate date, tentatively by **1 March 2024** for implementation of performance-based separation with PBCS requirements over the BOB area with the transition period to allow non-equipped aircraft at a certain flight level band to facilitate the equipage rate.

6.46 The *Implementation Timelines for BOBTFRG Priority Areas V3.0*, as updated by the meeting is appended at **Appendix E** to this report.

Agenda Item 7: Date and Venue of the Next Meeting

7.1 The BOBTFRG/5 was tentatively planned in November 2023 at a location to be determined (preferably in Bangkok). States/Administrations considering hosting the BOBTFRG/5 were invited to contact the Secretariat.

Closing of the Meeting

The Chair thanked the meeting participants for their significant work during a busy meeting program.

LIST OF PARTICIPANTS

	STATE/NAME		TITLE/ORGANIZATION
1.	BANGLADESH (3)		
	1.	Ms. Sabera Rahman	Deputy Director (ATM) Civil Aviation Authority of Bangladesh <u>BANGLADESH</u>
	2.	Mr. Mahmud Akhter Hossain	Assistant Director(ATM) Civil Aviation Authority of Bangladesh <u>BANGLADESH</u>
	3.	Mr. Baharul Hayat Bipul	Assistant Director (ATM)-Supervisor/OJTI Civil Aviation Authority of Bangladesh <u>BANGLADESH</u>

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	STATE/NAME		TITLE/ORGANIZATION
2.	INDIA (7)		
	4.	Mr. Muruganandam Vedarethinam	General Manager (CNS) Airports Authority of India <u>INDIA</u>
	5.	Mr. Prakasam Gowrishankar	Joint General Manager(ATM) Airports Authority of India <u>INDIA</u>
	6.	Mr. Asit Kumar Sinha	Joint General Manager(ATM-ASM) Airports Authority of India <u>INDIA</u>

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	STATE/NAME		TITLE/ORGANIZATION
	7.	Mr. Sambath Kumar Govindan	Joint General Manager(ATM) Airports Authority of India <u>INDIA</u>
	8.	Mr. Subrata Halder	ATC, Joint General Manager (ATM) Airports Authority of India <u>INDIA</u>
	9.	Mr. Saif Ullah	Air Traffic controller Airports Authority of India <u>INDIA</u>
	10.	Mr. Arindam Ghosh	Air Traffic controller Airports Authority of India <u>INDIA</u>

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	STATE/NAME		TITLE/ORGANIZATION
3.	INDONESIA (8)		
	11.	Mr. Nur Said Eko Nugroho	Air Navigation Inspector (ATS) DGCA Indonesia <u>INDONESIA</u>
	12.	Mr. Rino Laharto	Manager of Airspace Development AirNav Indonesia <u>INDONESIA</u>
	13.	Mr. Imam Nurdin	Jr. Manager Planning & Evaluation ACC AirNav Indonesia <u>INDONESIA</u>
	14.	Mr. Arief Widyantoro	Safety Inspector AirNav Indonesia <u>INDONESIA</u>

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	STATE/NAME		TITLE/ORGANIZATION
	15.	Mr. Didik Rohman Hadi Sutoyo	Safety and Quality Assurance AirNav Indonesia <u>INDONESIA</u>
	16.	Mr. Rama Aditya	Air Traffic Controller AirNav Indonesia <u>INDONESIA</u>
	17.	Ms. Kholifatul Azizah	Air Traffic Controller AirNav Indonesia <u>INDONESIA</u>
	18.	Mr. Ryan asyari Yulianto	Air traffic controller AirNav Indonesia <u>INDONESIA</u>

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	STATE/NAME		TITLE/ORGANIZATION
4.	MALAYSIA (15)		
	19.	Mr. Muhammad Firdaus Ismail	Principal Assistant Director Civil Aviation Authority of Malaysia <u>MALAYSIA</u>
	20.	Mr. Mohd Adelin Bin Md Yusop	Senior Assistant Director Civil Aviation Authority of Malaysia <u>MALAYSIA</u>
	21.	Ms. Nur A'fifah Mansor	Senior Assistant Director Civil Aviation Authority of Malaysia <u>MALAYSIA</u>

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	STATE/NAME		TITLE/ORGANIZATION
	22.	Mr. Ahmad Syahidan Abu Bakar	Senior Assistant Director Civil Aviation Authority of Malaysia <u>MALAYSIA</u>
	23.	Mr. Nik Izat Amir	Air Traffic Control Officer Civil Aviation Authority of Malaysia <u>MALAYSIA</u>
	24.	Mr. Mohammad Firdaus M Asa'ri	Air Traffic Control Officer Civil Aviation Authority of Malaysia <u>MALAYSIA</u>
	25.	Ms. Noor Fazlin Mazlan	Air Traffic Controller Civil Aviation Authority of Malaysia <u>MALAYSIA</u>

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	STATE/NAME		TITLE/ORGANIZATION
	26.	Mr. Sharudin Hashim	Air Traffic Controller Civil Aviation Authority of Malaysia <u>MALAYSIA</u>
	27.	Ms. Salini A/L Kasee	Air Traffic Controller Civil Aviation Authority of Malaysia <u>MALAYSIA</u>
	28.	Raja Amsyar Hillman Bin Raja Badrul Hisham	Deputy Director Civil Aviation Authority of Malaysia <u>MALAYSIA</u>
	29.	Mr. Syahrudin Mustafa	Principal Assistant Director Civil Aviation Authority of Malaysia <u>MALAYSIA</u>

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	STATE/NAME		TITLE/ORGANIZATION
	30.	Mr. Abdul Rali Bin Kassim	Principal Assistant Director Civil Aviation Authority of Malaysia <u>MALAYSIA</u>
	31.	Irman Bin Ridwan	Principal Assistant Director Civil Aviation Authority of Malaysia <u>MALAYSIA</u>
	32.	Mr. Muhammad Hafidz Ibrahim	Senior Assistant Director Civil Aviation Authority of Malaysia <u>MALAYSIA</u>
	33.	Syahroni Bin Chek Rus	Assistant Director Civil Aviation Authority of Malaysia <u>MALAYSIA</u>

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	STATE/NAME		TITLE/ORGANIZATION
5.	PAKISTAN (2)		
	34.	Mr. Abdul Manan	Deputy Director ATS Pakistan Civil Aviation Authority <u>PAKISTAN</u>
	35.	Mr. Sohail Ahmed	Air Traffic Controller Pakistan Civil Aviation Authority <u>PAKISTAN</u>
6.	SINGAPORE (3)		
	36.	Mr. Jermaine Hoh	Deputy Chief(Ops, Area) Civil Aviation Authority of Singapore <u>SINGAPORE</u>
	37.	Mr. Jonathan Yeung	Air Traffic Control Manager (ATM) Civil Aviation Authority of Singapore

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	STATE/NAME		TITLE/ORGANIZATION
			<u>SINGAPORE</u>
	38.	Ms. Meijing Choo	H(ATM-AP) Civil Aviation Authority of Singapore <u>SINGAPORE</u>
7.	SRI LANKA (3)		
	39.	Mr. Thilina Warnasinghe	Senior Civil Aviation Inspector CAASL <u>SRI LANKA</u>
	40.	Mr. Aruna Fernando	Senior Manager - Air Traffic Control (Planning & Standards) Airport & Aviation Services Sri Lanka <u>SRI LANKA</u>

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	STATE/NAME		TITLE/ORGANIZATION
	41.	Ms. Priyasha Hettiarachchi	Air Traffic Controller Airport & Aviation Services Sri Lanka <u>SRI LANKA</u>
8.	THAILAND (11)		
	42.	Mr. Suvichan Sathitkitpichet	Director, Network Operations Air Traffic Management Center Aeronautical Radio of Thailand Ltd. (AEROTHAI) <u>THAILAND</u>
	43.	Mr. Piyawut Tantimekabut	Air Traffic Management Network Manager Aeronautical Radio of Thailand Ltd. (AEROTHAI) <u>THAILAND</u>

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	STATE/NAME		TITLE/ORGANIZATION
	44.	Ms. Chananya Pinkaewprasert	Air Traffic Management Network Manager Aeronautical Radio of Thailand Ltd. (AEROTHAI) <u>THAILAND</u>
	45.	Mr. Aram Lertlum	Air Traffic Control Manager (Bangkok Area Control Center) Aeronautical Radio of Thailand Ltd. (AEROTHAI) <u>THAILAND</u>
	46.	Ms. Chayanan Sanorjit	Air Traffic Controller 2 (Bangkok Area Control Center) Aeronautical Radio of Thailand Ltd. (AEROTHAI) <u>THAILAND</u>
	47.	Mr. Dolsarit Somseang	Senior Systems Engineer (Safety Management System) Aeronautical Radio of Thailand Ltd. (AEROTHAI) <u>THAILAND</u>

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	STATE/NAME		TITLE/ORGANIZATION
	48.	Mr. Ponkrit Sawedsud	Systems Engineer (Safety Management System) Air Traffic Management Network Manager Aeronautical Radio of Thailand Ltd. (AEROTHAI) <u>THAILAND</u>
	49.	Ms. Jullada Chullapant	Flight Operation Officer Thai Airways <u>THAILAND</u>
	50.	Mr. Pongsakorn Sirisaway	Senior Flight Operation Officer Thai Airways <u>THAILAND</u>
	51.	Mr. Prasert Pathumbal	Aircraft Flight Dispatcher Thai Airways <u>THAILAND</u>

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	STATE/NAME		TITLE/ORGANIZATION
	52.	Mr. Suvichan Sathitkitpichet	Director, Network Operations Air Traffic Management Center Aeronautical Radio of Thailand Ltd. (AEROTHAI) <u>THAILAND</u>
9.	UNITED STATES OF AMERICA(1)		
	53.	Mr. Shayne Campbell	Senior Air Traffic Representative Asia Pacific United States Federal Aviation Administration (FAA) <u>UNITED STATES OF AMERICA</u>
10.	IATA (13)		
	54.	Mr. John Moore	Assistant Director, Safety & Flight Operations, ASPAC IATA <u>SINGAPORE</u>
	55.	Mr. Diego Albert	Regional Assistant Director Operations, Safety and Security

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		STATE/NAME	TITLE/ORGANIZATION
			IATA <u>SINGAPORE</u>
	56.	Mr. Daniel Smith	Manager ATM IATA/Qantas Group <u>AUSTRALIA</u>
	57.	Mr. Julian FUNG	International Operations Manager IATA/Cathay Pacific Airways <u>CHINA</u>
	58.	Mr. Prashant Sanglikar	Assistant Director Safety IATA <u>INDIA</u>
	59.	Mr. Sunil Prasad	VP-Flight Operations

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	STATE/NAME		TITLE/ORGANIZATION
			IATA/SpiceJet Ltd <u>INDIA</u>
	60.	Mr. Toru Namba	Manager IATA/Japan Air Lines <u>JAPAN</u>
	61.	Mr. Azizul Hakim Alias	Head Of OCC IATA/Batik Air Malaysia <u>MALAYSIA</u>
	62.	Mr. Clim van der Weijden	ATM Regional Manager Asia IATA/ KLM Royal Dutch Airlines <u>NETHERLANDS</u>
	63.	Mr. Imshik Shin	Deputy General Manager - CNS/ATM

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		STATE/NAME	TITLE/ORGANIZATION
			IATA/Korean Air <u>REPUBLIC OF KOREA</u>
	64.	Mr. Chee Seng Seow	Senior Manager TRP IATA/Singapore Airlines <u>SINGAPORE</u>
	65.	Mr. Leonard Wee	Vice President Operations IATA/Singapore Airlines <u>SINGAPORE</u>
	66.	Mr. Michael Fahmer	Program Manager - Flight Planning and Weather Support IATA/American Airlines <u>UNITED STATES</u>
11.	ICAO (6)		

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	STATE/NAME		TITLE/ORGANIZATION
	67.	Ms. Chananphorn Sakdanuphap	Admin Associate, Technical Cooperation ICAO Asia and Pacific Regional Office <u>THAILAND</u>
	68.	Ms. Sunok LEE	Regional Officer, Air Traffic Management ICAO Asia and Pacific Regional Sub-Office <u>CHINA</u>
	69.	Mr. Manjunath K Nelli	Regional Officer, Air Traffic Management ICAO Asia and Pacific Regional Sub-Office <u>CHINA</u>
	70.	Mr. Vijay Kumar Mishra	Regional Officer, Air Traffic Management ICAO Asia and Pacific Regional Sub-Office <u>CHINA</u>

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	STATE/NAME		TITLE/ORGANIZATION
	71.	Mr. Zhifeng Xu	Regional Officer, Air Traffic Management ICAO Asia and Pacific Regional Sub-Office <u>CHINA</u>
	72.	Ms. Siqi Yang	Program Assistant ICAO Asia and Pacific Regional Sub-Office <u>CHINA</u>
12.	IFATCA (1)		
	73.	Mr. Saifullah	<u>IFATCA</u>

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LIST OF WORKING AND INFORMATION PAPERS WORKING PAPERS**WORKING PAPERS**

Number	Agenda	WORKING PAPERS	Presented By
WP/01	1	BOBTFRG/4 Provisional Agenda	Secretariat
WP/02	2	Malaysia's Initiative to Improve Air Traffic Services in the BAY OF BENGAL AREA	Malaysia
WP/03	2	CNS ATM Infrastructure in Chennai FIR for BOB Traffic Management	India
WP/04	4	Review of Selected ATS Route Proposals from the Asia/Pacific Region ATS Route Catalogue	Secretariat
WP/05	5	BOBTFRG Terms of Reference and Task List	Secretariat
WP/06	6	Progress of User-Preferred Route (UPR) Implementation in Indonesia	Indonesia
WP/07	6	Bay of Bengal Flight Level Allocation Scheme Chart	Secretariat
WP/08	6	Congestion in the BoB and IATA Survey Data	IATA
WP/09	6	Review of BOBTFRG Priority Areas Implementation Timelines	Secretariat

INFORMATION PAPERS

Number	Agenda	INFORMATION PAPERS	Presented By
IP/01		Provisional List of Working and Information Papers	Secretariat

FLIMSIES

Number	Agenda	FLIMSIES	Presented By

PRESENTATIONS

Number	Agenda	PRESENTATIONS	Presented By
-	-	-	-

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TERMS OF REFERENCE

BAY OF BENGAL TRAFFIC FLOW REVIEW GROUP (BOBTFRG)

1. Objective

1.1. The objectives of the BOBTFRG are to:

- a) identify requirements and improvements for optimising airspace capacity and maintaining an efficient route network across the Bay of Bengal airspace and routes leading towards Afghanistan's airspace;
- b) monitor the status of implementation of the agreed ATS routes and airspace improvement projects; and
- c) report outcomes of the review and recommendations to the South Asia, Indian Ocean and Southeast Asia ATM Coordination Group (SAIOSEACG).

2. Tasks

2.1. To meet this objectives, with reference to the *Asia/Pacific Region Seamless ANS Plan* and expected traffic growth, the BOBTFRG shall:

- a) Review the existing route structures and airspace improvement projects in the concerned airspaces (Bangkok, Chennai, Colombo, Dhaka, Jakarta, Kabul, Karachi, Kuala Lumpur, Kolkata, Lahore and Yangon Flight Information Regions);
- b) Identify current CNS/ATM capabilities and determine the CNS/ATM requirements which would be needed in order to optimise the airspace to support the implementation of more efficient route network that accommodated enroute traffic (and also departures from India and Pakistan that would join this traffic flow);
- c) Identify the most efficient horizontal separations to be utilised, based on the current and planned CNS/ATM capabilities, taking into account aircraft approval status of the traffic operating on the relevant routes as well as the new CNS capabilities available;
- d) Review the existing Flight Level Allocation Scheme (FLAS) operating within the Bay of Bengal airspace with a view to enhancing efficiencies;
- e) Establish appropriate timelines/milestones/dependencies for activities planned under this Group;
- f) Make recommendations to SAIOSEACG on implementation plans for route structures, airspace, FLAS and separation solutions to meet the expectations of the *Asia/Pacific Seamless ANS Plan*; and
- g) Make recommendations to SAIOSEACG on the future status of the Bay of Bengal Cooperative ATFM System (BOBCAT) tool.

3. Participation

- 3.1. Participation of the BOBTFRG includes Afghanistan, Bangladesh, India, Indonesia, Malaysia, Myanmar, Pakistan, Singapore, Sri Lanka, Thailand and IATA, and any other body that the BOBTFRG deems appropriate.

Approved by SAIOSEACG/1, 29 April 2022

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Appendix B to the Report

BOBTFRG TASK LIST*(Last updated BOBTFRG/4)*

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
1/3	India to review Bay of Bengal conflictions and remove FLAS with Port Blair ADS-B operational if possible	BOBTFRG/4	India	Open Closed	<p>Action Item 4/2 of SAIOACG Task List.</p> <p>India to update ATM/SG/4. Needs to be consulted with Myanmar (Yangon FIR). Port Blair ADS-B still on test (SAIOACG/8 2018).</p> <p>India commented that FLAS should be retained, as there was still limitation on surveillance and communication capabilities. A new ATS route L524 had been implemented to increase the capacity to offset the FLAS.</p> <p>Task updated at BOBTFRG/3. No report received.</p> <p>Combined to Action Item 2/3 with India as the lead State</p>
2/1	Identify current spacing implemented by States	BOBTFRG/4	All BOBTFRG States	Open Completed	<p>States to fill and submit the Attachment D to BOBTFRG/2 State Letter by 31 October 2019.</p> <p>Bangladesh, India, Indonesia, Malaysia, Myanmar, Pakistan and Thailand had submitted data to ICAO.</p> <p>Re: ATM/SG/9 WP/7, ICAO APAC Regional Office would circulate a new survey form,</p>

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ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
					<p>requesting APAC Administrations to provide information about the authorised ATC separation minimums and separation minimums at each FIR TOC point.</p> <p>Refer to ATM SG/10 WP08</p>
2/3	<p>Review the existing Flight Level Allocation Scheme (FLAS) operating within the concerned airspace, with a view to improve efficiencies.</p> <p>Review and plan improved and efficient FLAS operating within the BOB airspace.</p>	<p>31 January 2022</p> <p>BOBTFRG/5</p>	<p>All BOBTFRG States</p> <p>(Lead State: India)</p>	<p>Open</p>	<p>States to fill and submit the Attachment D to BOBTFRG/2 State Letter by 31 October 2019.</p> <p>Reason for FLAS: multiple crossing of higher density routes over Category R airspace.</p> <p>States to verify the accuracy of the information in the Bay of Bengal FLAS Chart (BOBTFRG/3 Report re: WP/07).</p> <p>BOBTFRG/4 Report re: WP07</p> <p>In a holistic approach, FLAS improvement is suggested to be included in the BOB Route Network Plan for enhancement of BOB airspace efficiency.</p>

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ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
2/5	Investigate whether appropriate handoff procedures are implemented between controllers providing ATS surveillance in adjacent airspace – review ATS Letter of Agreement (LoA)	31 January 2022	All BOBTFRG States	Open Completed	Bangkok – Kuala Lumpur ACCs: Yes Bangkok – Yangon ACCs: Yes Jakarta – Kuala Lumpur ACCs: Yes Dhaka – Kolkata ACCs: expected in 2025. Dhaka – Yangon ACCs: expected in 2025. Yangon – Kolkata ACCs (ATS route A201)? Delhi – Lahore ACCs? Delhi – Karachi ACCs? Mumbai – Karachi ACCs? Lahore – Kabul ACCs? Karachi – Kabul ACCs? Colombo ACC – Chennai OCC? BOBTFRG/4 WP09 Attachment B

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ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
2/6	States to identify routes along which reliable surveillance and communication are available to look at the possibility of reduced longitudinal spacing	31 January 2022	All States	Open Completed	<p>India and Pakistan: 50 NM longitudinal spacing implemented at the TOC points of following FIR boundaries: Delhi – Karachi FIRs; Delhi – Lahore FIRs; and Mumbai – Karachi FIRs.</p> <p>Indonesia and Malaysia: 20 NM longitudinal spacing implemented at the following TOC points: GOTLA, PUGER and SALAX.</p> <p>Malaysia and Thailand: 30 NM longitudinal spacing implemented at the TOC points between Bangkok and Kuala Lumpur FIRs.</p> <p>Myanmar and Thailand: 30 NM/20 NM longitudinal surveillance spacing implemented at the following TOC points; LUDVI, BETNO, NURDA, PUMOR, TANEK and AKATO.</p> <p>Myanmar and Thailand?</p> <p>India and Myanmar (ATS route A201)?</p> <p>India and Sri Lanka?</p>

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ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
2/7	Agreement between States to implement 20 NM longitudinal spacing (or as close to the separation minima as practicable) in Category S airspace through Thailand, Myanmar, Bangladesh, India, Pakistan and Afghanistan	2025	Afghanistan, Bangladesh, India, Myanmar, Pakistan, Thailand	Open	<p>Traffic operating north of Bay of Bengal airspace will traverse through Dhaka FIR, and currently no en-route ATS surveillance service provided in Dhaka FIR.</p> <p>To be reviewed in tandem with the Modernization Project of CNS-ATM System of Bangladesh.</p>
2/8	The application of performance-based separation minima and distance-based separation minima (RNP 10, with procedural position reports not less than 24 minutes apart) in airspace over the high seas requires supporting procedures in ICAO Doc 7030 – <i>Regional Supplementary Procedures</i> .	SAIOSEACG/4 States (TF) report to SAIOSEACG/2	India, Indonesia, Malaysia, Myanmar, Sri Lanka	Open	<p>Chennai and Kuala Lumpur ACCs to signed revised LoA by 31 January 2020.</p> <p>Jakarta and Colombo had implemented 50 NM longitudinal spacing.</p> <p>Yangon and Kolkata, and Chennai had implemented 50 NM longitudinal spacing.</p> <p>Chennai OCC and Kuala Lumpur ACC had signed a new LoA, effected on 01 June 2021. 50 NM longitudinal spacing implemented.</p> <p>BOBTFRG/3 Report re: IP/03.</p> <p>Ref. BOBTFRG/4 WP09</p>

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ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
2/10	Implementation of 50 NM longitudinal separation (RNAV 10/ RNP 10) with PBCS in the BOB airspace, at or above a level to be determined	To be discussed at SAIOSEACG/1 States (TF) report to SAIOSEACG/2	States, IATA	Open	BOBTFRG/3 Report re: WP/08. No discussion at the SAIIOSEACG/1 Ref. BOBTFRG/4 WP09
2/11	Develop PBCS implementation plan to support 30 NM longitudinal spacing on RNP 4 (or RNP 2) routes within Category R airspace of BOB	To be determined States (TF) report to SAIOSEACG/2	India, Indonesia, Malaysia, Myanmar, Sri Lanka	Open	States that require PBCS to support 30 NM longitudinal spacing: Bangladesh: To be determined. Sri Lanka: No information. India: Expected to be implemented in Chennai FIR in 2020; Mumbai FIR in 2023; and Kolkata FIR to be determined. Indonesia: Expected in 2023 as part of the new Jakarta ACC ATM system project. Malaysia: Expected in second quarter of 2022. Myanmar: To be determined.

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ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
2/12	Implementation of RNP 4 (or RNP 2) routes within BOB airspace	To be determined States (TF) report to SAIOSEACG/2	India, Indonesia, Malaysia, Myanmar, Sri Lanka	Open	Subject to the implementation of PBCS.
2/13	Agreement between States to implement 30 NM longitudinal spacing on affected ATS routes within Category R airspace of BOB	To be determined States (TF) report to SAIOSEACG/2	India, Indonesia, Malaysia, Myanmar, Sri Lanka	Open	
2/14	Review the demand and capacity on the affected ATS routes	To be determined 2025 (SAIOSEACG/4)	All BOBTFRG States	Open	Three months after the implementation of 30 NM longitudinal spacing on affected ATS routes within Category R airspace of BOB.
2/15	Identify solutions to integrate departing traffic from New Delhi with the BOBCAT traffic	To be determined 2025 (SAIOSEACG/4)		Open	
2/16	Review the requirement to retain BOBCAT tool based on the increase in capacity utilising improved longitudinal spacing, taking into account forecast growth in air traffic	To be determined 2025 (SAIOSEACG/4)		Open	

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ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
2/17	Make recommendations to SAIOACG on the future status of the BOBCAT tool	To be determined 2025 (SAIOSEACG/4)		Open	
2/18	Malaysia to consider India's proposal to realign ATS route N877 from AMVUR to AGEGA and join ATS route L510. ATS route L510 will be eastbound only up to AGEGA within Chennai FIR and Kuala Lumpur ACC may facilitate both east bound and west bound between LEKIR and EMRAN within the Kuala Lumpur FIR	November 2022 SAIOSEACG/2	India, Malaysia	Open	BOBTFRG/2 Report WP/05. Task updated at BOBTFRG/3. Malaysia positive, and would conduct meeting with India. A joint paper expected to the SAIOSEACG/2 after discussion btw India and Malaysia
3/1	Engage in three party discussion between India, Indonesia and Malaysia to support the mitigating of LHDs at Chennai – Kuala Lumpur interface (Hot Spot A2)	SAIOSEACG/1	India, Indonesia, Malaysia	Open Completed	BOBTFRG/3 Report re: Para 3.6 on WP/02.
3/2	Amendment to the BOBTFRG Terms of Reference	SAIOSEACG/1	ICAO	Open Completed	BOBTFRG/3 Report re: WP/05. Decision SAIOSEACG/1-1: Revised BOBTFRG Terms of Reference

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ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
3/3	Withdrawal of ATS Route B466 Segment in Chennai FIR	SAIOSEACG/4 SAIOSEACG/2	India, Indonesia, Malaysia, ICAO	Open	BOBTFRG/3 Report re: WP/06. BOBTFRG/4 Report re: WP05
3/4	Analysis on fleet equipage in ADS-C/CPDLC, RNP 10, RNP 4 and RNP 2 (continental and oceanic)	SAIOSEACG/4 States (TF) report to SAIIOSEACG/2	States, IATA	Open	BOBTFRG/3 Report re: WP/08. BOBTFRG/4 WP09 IATA presented IP06 to the ATM SG/10 Sri Lanka Colombo oceanic airspace: ADS-C/CPDLC, RNP 10, continental airspace: ADS-B/ADC-C/CPDLC, RNP10 equipped
3/5	States requiring PBCS support to implement performance-based separation to develop its PBCS implementation plan, including expected date of implementation.	SAIOSEACG/4 States (TF) report to SAIIOSEACG/2	India, Indonesia, Malaysia, Myanmar, Sri Lanka	Open	BOBTFRG/3 Report re: WP/08. BOBTFRG/4 Report re: WP/09

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ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
4/1	To investigate the possibility to include FL280 for ATS Routes L301, L524, M506, N895	BOBTFRG/5 and SAIOSEACG/2	India, Thailand, Myanmar, IATA	Open	BOBTFRG/4 WP/07
4/2	<p>Report the draft Trial Implementation Plan as adopted by the meeting to report to ATM SG/11 (2023)</p> <p>The 1st kick-off meeting is scheduled on 10 Jan 2023</p>	SAIOSEACG/2	Task Force Team (from all BOB States led by India)	Open	BOBTFRG/4 WP/03, WP08 and WP/09 BOBTFRG Decision 4-1

IMPLEMENTATION TIMELINES FOR BOBTFRG PRIORITY AREAS V3.0

BOBTFRG Priority Area 1: Conduct a review of the air traffic flows in Category S airspace through Thailand, Myanmar, Bangladesh, India, Pakistan and Afghanistan. The objective is to develop a plan to implement improved and harmonised longitudinal spacing on affected ATS route(s) (targeting 20 NM longitudinal spacing, or as close to the separation minima as practicable).

		Activity	Completion Date	Remarks
Phase 1	1	Identify current spacing implemented by States.	BOBTFRG/4 Completed	States to fill and submit the Attachment D to BOBTFRG/2 State Letter by 31 October 2019. Updated at BOBTFRG/3: Bangladesh, India, Indonesia, Malaysia, Myanmar, Pakistan and Thailand had submitted data to ICAO. Re: ATM/SG/9 WP/7, ICAO APAC Regional Office would circulate a new survey form, requesting APAC Administrations to provide information about the authorised ATC separation minimums and separation minimums at each FIR TOC point.
	2	Identify impediments to implementation of improved spacing (staffing and ATC sectorisation constraints).	Completed at BOBTFRG/3	States to fill and submit the Attachment D to BOBTFRG/2 State Letter by 31 October 2019. Updated at BOBTFRG/3: Reasons provided by States: communication and surveillance coverage limitations; ATM system

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		Activity	Completion Date	Remarks
				capability related to PBCS; and low level of ADS-C/CPDLC equipage.
	3	Identify the ATS surveillance and communication gaps and actions taken to fill the gaps.	Closed at BOBTFRG/3	Ref CNS SG/23 WP/22. Updated at BOBTFRG/3: ATS Surveillance and DCPC VHF Coverage Charts was included in the <i>Asia/Pacific Seamless ANS Plan V3.0</i> .
	4	Identify ATS Inter-Facility Data Communication (AIDC) and/or direct speech circuits' capabilities.	Closed at BOBTFRG/3	States to provide update to the Secretariat latest by 30 November 2019. Updated at BOBTFRG/3: Updated AIDC implementation status in the APAC Region was provided in Appendix B to the APA TF/7 Report.

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		Activity	Completion Date	Remarks
	5	Investigate whether appropriate handoff procedures are implemented between controllers providing ATS surveillance in adjacent airspace – review ATS Letter of Agreement (LOA).	31 January 2022 Completed at BOBTFRG/4	Updated at BOBTFRG/3: Bangkok – Kuala Lumpur ACCs: Yes Bangkok – Yangon ACCs: Yes Jakarta – Kuala Lumpur ACCs: Yes Dhaka – Kolkata ACCs: expected in 2025. Dhaka – Yangon ACCs: expected in 2025. Yangon – Kolkata ACCs (ATS route A201)? Delhi – Lahore ACCs? Delhi – Karachi ACCs? Mumbai – Karachi ACCs? Lahore – Kabul ACCs? Karachi – Kabul ACCs? Colombo ACC – Chennai OCC?

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		Activity	Completion Date	Remarks
	6	<p>Review the existing Flight Level Allocation Scheme (FLAS) operating within the concerned airspace, with a view to improve efficiencies.</p> <p>Review and plan improved and efficient FLAS operating within the BOB airspace.</p>	<p>31 January 2022</p> <p>BOBTFRG/5</p>	<p>States to fill and submit the Attachment D to BOBTFRG/2 State Letter by 31 October 2019.</p> <p>Updated at BOBTFRG/3:</p> <p>Reason for FLAS: multiple crossing of higher density routes over Category R airspace.</p> <p>States to confirm the accuracy of the information in the Bay of Bengal FLAS Chart (BOBTFRG/3 Report re: WP/07).</p>

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		Activity	Completion Date	Remarks
	7	<p>States to identify routes along which reliable surveillance and communication are available to look at the possibility of reduced longitudinal spacing.</p> <p>Confirm the coverage of Surveillance and Communication over the BOB airspace (to be tasked to TF to draft the Plan of the BOB Route Network)</p>	<p>31 January 2022</p> <p>States (TF) report to SAIOSEACG/2</p>	<p>Updated at BOBTFRG/3:</p> <p>India and Pakistan: 50 NM longitudinal spacing implemented at the TOC points of following FIR boundaries: Delhi – Karachi FIRs; Delhi – Lahore FIRs; and Mumbai – Karachi FIRs.</p> <p>Indonesia and Malaysia: 20 NM longitudinal spacing implemented at the following TOC points: GOTLA, PUGER and SALAX.</p> <p>Malaysia and Thailand: 30 NM longitudinal spacing implemented at the TOC points between Bangkok and Kuala Lumpur FIRs.</p> <p>Myanmar and Thailand?</p> <p>India and Myanmar (ATS route A201)?</p> <p>India and Sri Lanka?</p>
Phase 2	8	<p>Complete the agreement between States to implement 20 NM longitudinal spacing (or as close to the separation minima as practicable) in Category S airspace through Thailand, Myanmar, Bangladesh, India, Pakistan and Afghanistan.</p> <p>Bangladesh regularly keeps the meeting updated the progress of</p>	2025	<p>Updated at BOBTFRG/3:</p> <p>Traffic operating north of Bay of Bengal airspace will traverse through Dhaka FIR, and currently no en-route ATS surveillance service provided in Dhaka FIR.</p> <p>To be reviewed in tandem with the Modernization Project of CNS-ATM System of</p>

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		Activity	Completion Date	Remarks
		CNS-ATM Modernization Project.		Bangladesh.

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BOBTFRG Priority Area 2: Conduct a review of the air traffic flows in Category R airspace within Bay of Bengal. The objective is to develop a plan to implement improved and harmonised **30 NM longitudinal spacing** on affected ATS routes.

		Activity	Completion Date	Remarks
Phase 1	1	<p>Agreement between States to implement 50 NM longitudinal spacing between applicable aircraft on affected ATS routes.</p> <p>The application of performance-based separation minima and distance-based separation minima (RNP 10, with procedural position reports not less than 24 minutes apart) in airspace over the high seas requires supporting procedures in ICAO Doc 7030 – <i>Regional Supplementary Procedures</i>.</p>	<p>SAIOSEACG/1</p> <p>States (TF) report to SAIIOSEACG/2</p>	<p>Chennai and Kuala Lumpur ACC to signed revised LoA by 31 January 2020.</p> <p>Jakarta and Colombo had implemented 50 NM longitudinal spacing.</p> <p>Yangon and Kolkata, and Chennai had implemented 50 NM longitudinal spacing.</p> <p>Updated at BOBTFRG/3:</p> <p>Chennai OCC and Kuala Lumpur ACC had signed a new LoA, effected on 01 June 2021. 50 NM longitudinal spacing implemented.</p> <p>No update at the SAIIOSEACG/1</p>
	2	Facilitate potential modernization of Bangladesh CNS/ATM system (meeting tentatively planned for 23 October 2019).	Closed	<p>ICAO RO to provide feedback during SAIOACG/10.</p> <p>Updated at BOBTFRG/3:</p> <p>The Modernization Project of CNS-ATM System of Bangladesh expected to be completed in 2024.</p>
	3	Research and development project conducted by India, Singapore and any other interested States to look at technology capability	Closed	Subject to the approval from the competent

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		Activity	Completion Date	Remarks
		and benefits, including the business case for enhanced surveillance and communication.		agencies of each State. India and Singapore (ATMRI) would examine the proposal and submit their comments at the BOBTFRG/3. Updated at BOBTFRG/3: On 25 November 2019, Airport Authority of India had an informal meeting with ATMRI Singapore on the ICAO request in BOBTFRG/2 for a joint research and development. In the meeting, ATMRI informed that communications and surveillance was not in their domain of research, and they would not be able to participate.

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		Activity	Completion Date	Remarks
	4	Implementation of 50 NM longitudinal separation (RNAV 10/RNP 10) with PBCS in the BOB airspace, at or above a level to be determined.	<p>To be discussed at SAIOSEACG/1</p> <p>States (TF) report to SAIOSEACG/2</p>	<p>ADS-C/CPDLC non-exclusive mandate?</p> <p>PfA to ICAO Doc 7030 – <i>Regional Supplementary Procedures</i>.</p> <p>Current fleet equipage is less than 70%.</p> <p>Most of the non-equip aircraft are narrow-body aircraft and low cost airlines.</p> <p>Updated at BOBTFRG/3:</p> <p>States to issue AIC after SAIOACG/10.</p> <p>For better clarity, the ADS-C/CPDLC non-exclusive mandate should be referred to as “<i>designation as non-exclusive PBN and PBCS airspace to allow operational priority for PBN and PBCS approved aircraft</i>”.</p> <p>Due to the COVID-19 pandemic, which has caused severe impact on airlines and ANSPs resources and revenue, the discussion on the plan designation as non-exclusive PBN and PBCS airspace to allow operational priority for PBN and PBCS approved aircraft has been postponed.</p>

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		Activity	Completion Date	Remarks
		a. States and IATA to conduct analysis on fleet equipage in ADS-C/CPDLC, RNP 10, RNP 4 and RNP 2 (continental and oceanic).	SAIOSEACG/1 States (TF) report to SAIOSEACG/2	BOBTFRG/3 Report re: WP/08. IATA presented its analysis results at the SAIIOSEACG/1 and ATM SG/10.
		b. States requiring PBCS support to implement performance-based separation to develop its PBCS implementation plan, including expected date of implementation.	SAIOSEACG/1 States (TF) report to SAIOSEACG/2	BOBTFRG/3 Report re: WP/08. No update at the SIOSEACG/1
5		Develop Performance-based Communication and Surveillance (PBCS) Implementation Plan to support 30 NM longitudinal spacing on RNP 4 (or RNP 2) routes within Category R airspace.	To be determined States (TF) report to SAIOSEACG/2	States that require PBCS to support 30 NM longitudinal spacing: Bangladesh: To be determined. Sri Lanka: No information. India: Expected to be implemented in Chennai FIR in 2020; Mumbai FIR in 2023; and Kolkata FIR to be determined. Indonesia: Expected in 2023 as part of the new Jakarta ACC ATM system project. Malaysia: Expected in second quarter of 2022. Myanmar: To be determined.

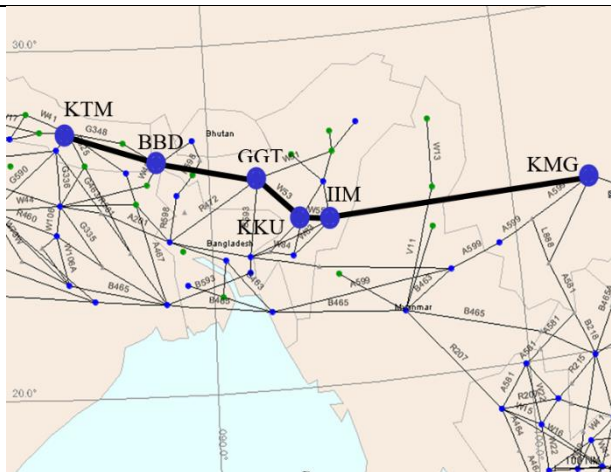
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		Activity	Completion Date	Remarks
	6	Implementation of RNP 4 (or RNP 2) routes within BOB airspace.	To be determined States (TF) report to SAIOSEACG/2	Subject to the implementation of PBCS.
	7	Agreement between States to implement 30 NM longitudinal spacing (or as close to the separation minima as practicable) on trial basis.	To be determined 1 March 2024	Updated at BOBTFRG/3: Subject to the implementation of PBCS.
Phase 2	8	Review the demand and capacity on the affected ATS routes.	To be determined 2025 (SAIOSEACG/4)	Subject to the trial implementation of PBCS.
	9	Identify solutions to integrate departing traffic from New Delhi with the BOBCAT traffic.	To be determined 2025 (SAIOSEACG/4)	
	10	Review the requirement to retain BOBCAT tool based on the increase in capacity utilising improved longitudinal spacing, taking into account forecast growth in air traffic.	To be determined 2025 (SAIOSEACG/4)	

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		Activity	Completion Date	Remarks
	11	Make recommendations to SAIOACG on the future status of the BOBCAT tool.	To be determined 2025 (SAIOSEACG/4)	

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ATS Route Name	HIMALAYA 02
State Priority	D
IATA Priority	HIGH
Requested by (when)	Nepal (01/09/2018)
States/Administrations Involved	Nepal, India, Myanmar, China (Kathmandu, Kolkata, Yangon, Kunming FIRs)
Route Description	<p>Kathmandu (KTM) 2740.5N 08521.0E – Bagdogra (BGD) 264118N 0881934E – Guwahati (GGT) 2606.1N 09135.3E – Silchar (KKU) 2454.8N 09258.9E – Imphal (IIM) 2446.0N 09354.5E – Kunming (KMG) 2501N 10244E</p> <p>Alternate proposal by IATA:</p> <p>Kathmandu (KTM) 2740.5N 08521.0E – Bagdogra (BGD) 264118N 0881934E – Guwahati (GGT) 2606.1N 09135.3E – Dimapur (DMR) 255251.30N 0934655.29E – Kunming (KMG) 2501N 10244E</p>
Flight Level Band	
Benefit (fuel, environmental)	<p>110 NM / 15 minutes, 520 kg fuel, 1640 kg CO₂ per flight</p> <p>Potential to save 19 to 25 minutes per flight and assist in decongesting A599/Lashio.</p>
Operational Information (potential airlines, flight frequency, potential city pairs)	
Remarks: IATA North Asia Office approached China who have indicated this route will be considered as part of the overall China route review – no timeline was given. China advised that they would seriously look at the proposal and would coordinate with Nepal (ref. para 8.4 of the SEA-RR/TF/4 report). At SAIOACG/9: with the improvement of surveillance capability, Myanmar would review this proposal. At ATMSG/7: Under	

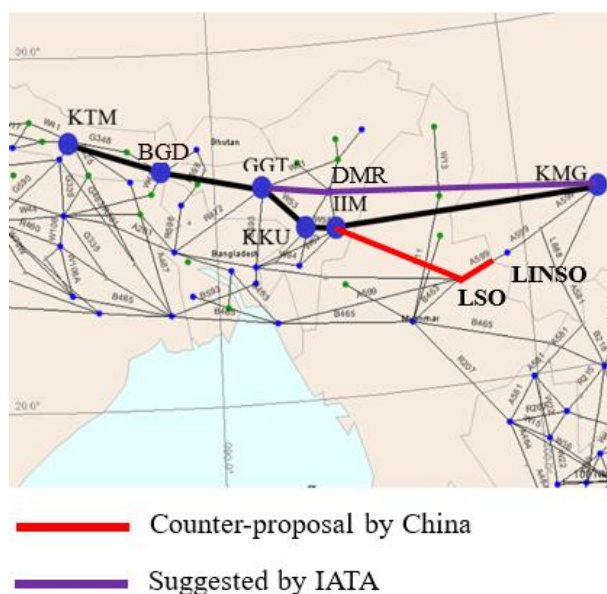
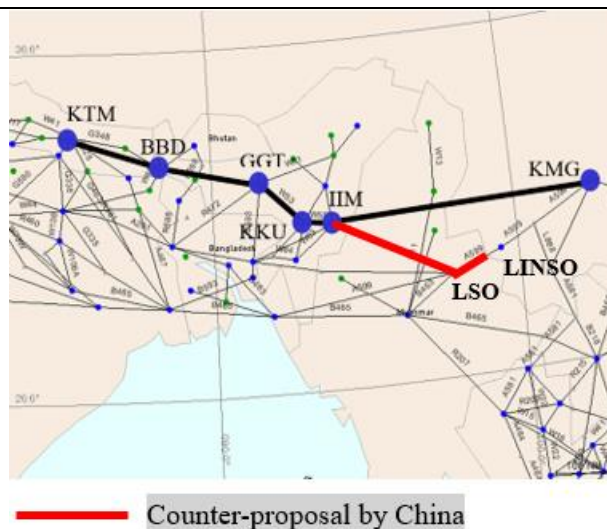
consideration by China; and Myanmar commented this route proposal would be dependent on the enhancement of surveillance and communication coverage in the area.

26/09/2020: Nepal updated this route proposal was under discussion with Myanmar, and they were optimistic that communication and surveillance capabilities would be available in Yangon FIR in the near future to support the implementation of this route.

20/11/2020: China commented that it was not possible to establish a new entry/exit point, and counter-proposed to re-align IIM – LSO – LINSO (existing entry/exit point between Yangon and Kunming FIRs).

At ATM/SG/8: In response to China’s counter-proposal, Myanmar provided their disagreement; and India commented the existing established routes in Kolkata FIR (i.e. W137, W53 and W55) was for domestic operations only, and India would need to review the possibility of opening these routes for international operations. India also suggested that in light of this, and the delay of more than nine years and the positions of Myanmar and China, Nepal may wish to consider a new proposal.

At ATM/SG/9: IATA commented that based on detailed re-assessment conducted by airlines, it confirmed a ‘HIGH’ priority to HIMALAYA 02. In addition, IATA suggested an



alternate proposal which had potential to save up to 19 to 25 minutes, and would also help to decongest ATS route A599/Lashio (LSO) and save additional 88 NM compared with IIM – LSO – LINSO route. IATA also requested India to consider keeping ATS route J7 (CDR2/3 route between GGT – DMR) available based on traffic demand timings. Nepal supported the alternate proposal as suggested by IATA, and would coordinate and hold a consultation meeting with the various stakeholders. China commented that it was not possible to establish a new entry/exit point. At BOBTFRG/3: Myanmar supported the proposal by IATA; India expressed its concern in getting a favourable response from its military authorities for the route between Guwahati (GGT) – Dimapur (DMR) – Kunming (KMG). According to India, implementing the route from Imphal (IIM) to Kunming (KMG) was more feasible. Given the fact that China had revised the priority as “D”, IATA was requested to consider the position of China before pursuing the proposal; and Bangladesh suggested IATA to consider: Kathmandu (KTM) – Saidpur (SDP) – Silchar (KKU) – Imphal (IIM) – Kunming (KMG).

27/1/2022: Nepal is having in-house discussion and consultation with different stakeholders and planning to coordinate with the affected

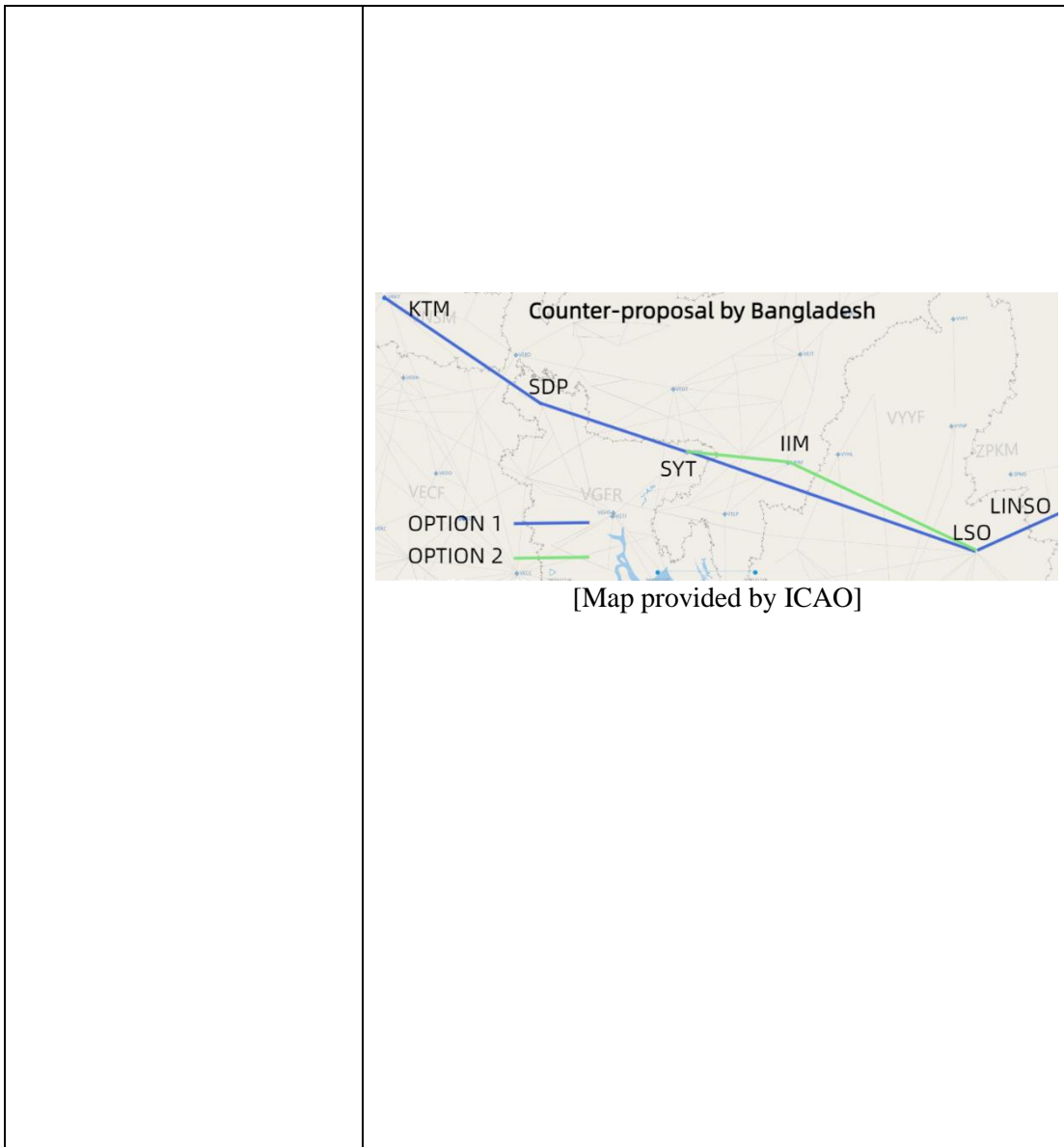
States soon.

1/3/2022: IATA may request that China explores possibility in near future of opening up additional entry/exit as this has direct savings to flights from Nepal and China.

3/3/2022: China commented there is no status update.

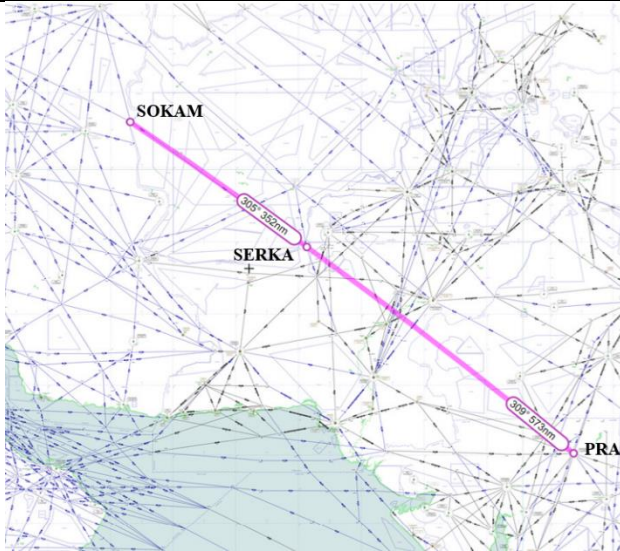
In August 2022, China commented that there was no plan to establish a new entry/exit point and suggested considering the route proposal based on the current existing entry/exit point LINSO.

BOBTFRG/4: Noting that with the upgradation of Bangladesh's CNS/ATM system, full coverage of communication in Dhaka FIR would be available shortly, so taking consideration of China's counter-proposal, Bangladesh proposed two route options as:
Kathmandu (KTM)- Saidpur (SDP)-SYT-LSO
or, Kathmandu (KTM)- Saidpur (SDP)-SYT- Imphal (IIM)-LSO. India commented that further meaningful discussion of this proposal should be based on the basic agreement between China and Myanmar.



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ATS Route Name	IND 07 (N877 Extension)
State Priority	D
IATA Priority	MEDIUM
Requested by (when)	IATA (01/09/2018)
States/Administrations Involved	India, Pakistan, Afghanistan (Mumbai, Delhi, Karachi, Kabul FIRs)
Route Description	Pratarah (PRA) 2401.8N 07445.0E – SERKA 2951.0N 06615.0E – SOKAM 3313.3N 06037.9E
Flight Level Band	28,000 - 46,000 ft
Benefit (fuel, environmental)	51 NM / 7 minutes, 835 kg fuel, 2,630 kg CO ₂ per flight, 3,387 tonnes fuel, 10,668 tonnes CO ₂ annually
Operational Information (potential airlines, flight frequency, potential city pairs)	LH, KL KUL/SIN – Middle East – East/Europe
Remarks: This proposal predates the extension of UL333 through Kabul FIR and has been under consideration for a number of years. The extension of UL333 is under utilised against other Kabul routes largely due the 45 NM ‘penalty’ in track mileage the current route structure requires. The route’s primary benefit at this stage will be westbound and during BOBCAT traffic flow. Extension completed SERKA to SOKAM. Update 08/02/13: PRA – SERKA has been approved by India after lengthy consultation with the military, complementary action from Pakistan awaited. At SAIOACG/9: Pakistan commented this route proposal was very unlikely to be implemented. Future of this route would be decided at SAIOACG/10 in 2020. Update from India on 02/08/2019: Since the proposal is pending concurrence of Pakistan for a long time, India need to renegotiate the proposal with military after comments from Pakistan. 17/08/2020: The designated established military areas in Karachi	

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FIR and route structure (crosser routes near the boundary with Delhi and Kabul FIRs) does not allow the establishment of this route. Pakistan proposed for deletion. At ATMSG/8: IATA preferred this route proposal to be retained in the Catalogue. At BOBTFRG/3: Pakistan re-affirmed that the designated established military areas in Karachi FIR and route structure (crossing routes near the boundary with Delhi and Kabul FIRs) would not permit the establishment of this route.

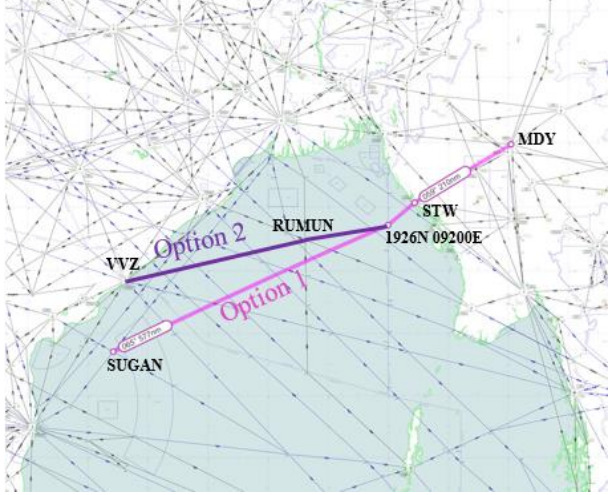
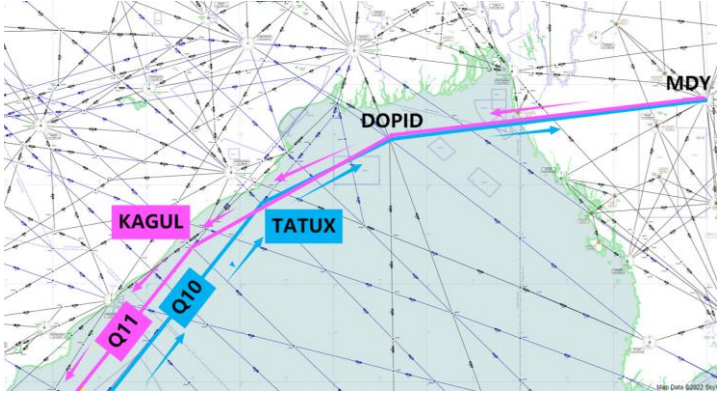
1/3/2022:IATA wants this proposal to be archived and reintroduced if/when future possibilities permit its success.

BOBTFRG/4: Pakistan reaffirmed that the proposed route was not feasible and supported archiving this proposal for future possibility, and IATA had no objection.

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ATS Route Name	BOB 01
State Priority	
IATA Priority	HIGH
Requested by (when)	IATA (05/11/2021: ATM/SG/9)
States/Administrations Involved	India, Bangladesh, Myanmar (Chennai, Kolkata, Dhaka, Yangon FIRs)
Route Description	<p>Option 1: SUGAN 152500N 0825045E – New Waypoint 192600N 0920000E (FIR BDRY between Kolkata and Yangon) – Sittwe (STW) – Mandalay (MDY)</p> <p>Option 2: Vishakhapatnam (VVZ) 174003.90N 0831510.00E – RUMUN 185805N 0891420E – New Waypoint 192600N 0920000E (FIR BDRY between Kolkata and Yangon) – Sittwe (STW) – Mandalay (MDY)</p> <p>Counter proposal by India:</p> <p>Eastbound: Q10 - TATUX - DOPID - MDY.</p> <p>Westbound: MDY - DOPID - KAGUL - Q11.</p>
Flight Level Band	All suitable bi-directional flight levels. Else, at least suitable eastbound flight levels. (airline operators preferred flight level would be FL330 as primary and FL310 as secondary)
Benefit (fuel, environmental)	<p>Option 1:</p> <p>Narrow body fleet: 94 NM / 12 minutes, 456 kg fuel, 1.5 tonnes CO₂ per flight, 166 tonnes fuel, 548 tonnes CO₂ annually</p> <p>Wide body fleet: 94 NM / 12 minutes, 900 kg fuel, 3.0 tonnes CO₂ per flight, 329 tonnes fuel, 1095 tonnes CO₂ annually</p> <p>Option 2:</p> <p>Narrow body fleet: 71 NM / 9 minutes, 344 kg fuel, 1.1 tonnes CO₂ per flight, 126 tonnes fuel, 402 tonnes CO₂ annually</p> <p>Wide body fleet: 71 NM / 9 minutes, 679 kg fuel, 2.2 tonnes</p>

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	CO ₂ per flight, 248 tonnes fuel, 803 tonnes CO ₂ annually
<p>Operational Information (potential airlines, flight frequency, potential city pairs)</p>	<p>About 110 flights per week</p> <p>Africa/South Asia – Far East, Southern India – East Coast of the United States</p>
<p>Remarks: The proposed routes would efficiently connect South West Bay of Bengal traffic and Far East. At BOBTFRG/3: In order to conduct better assessment, India requested IATA to provide the analysis of the fleet equipage in ADS-C/CPDLC and PBCS.</p> <p>IATA provided its analysis result on fleet readiness of its members in the SAIOSEACG/1 meeting (Mar. 2022).</p> <p>(8/8/2022)India in its assessment on BOB01 & BOB02 commented the proposed routes are outside the SUR and VHF coverage imposing unnecessary restrictions for all other cross-cutting routes. Therefore proposed alternatives as below:</p> <p>Eastbound aircraft via Q10: TATUX - DOPID - MDY.</p> <p>Westbound aircraft: MDY - DOPID - KAGUL - Q11.</p> <p>India stated this would improve the availability of getting optimum flight levels (well covered by SUR and VHF in Kolkata FIR) and require the approval of Bangladesh and Myanmar.</p> <p>ATMSG/10: Bangladesh commented that India’s counter-proposal overflies</p>	 <p style="text-align: center;">Counter-proposal by India:</p>  <p style="text-align: center;">[Map provided by ICAO]</p> <p style="text-align: center;">Counter-proposal by Bangladesh:</p>

the designated established military areas, so Bangladesh needs to consult with the military authorities.

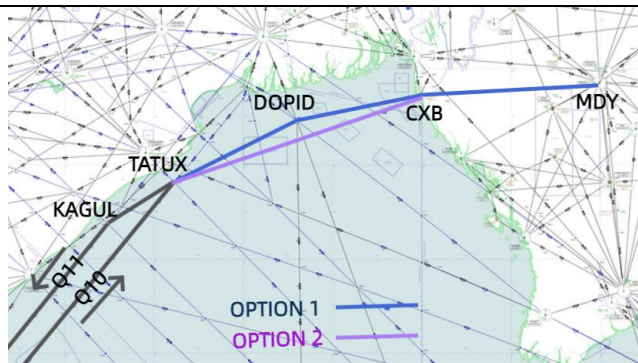
BOBTFRG/4: Bangladesh noted that the consultation with the military authority was still under process. To avoid the Danger area, two more alternative options are proposed with a connection to the new DVOR (Cox's Bazar, CXB), which is under construction and would be available in three months, detailed as follow:

DOPID-Cox's Bazar (CXB DVOR)-MDY or,

TATUX-Cox's Bazar (CXB DVOR)-MDY.

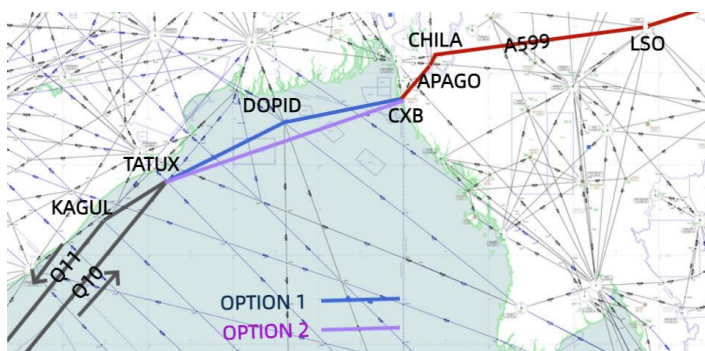
In response to Bangladesh's counterproposal, IATA suggested specifying a new waypoint at the position of Cox's Bazar instead of waiting for the availability of the new DVOR and proposed the following route connecting Cox Bazar-APAGO-CHILA and onwards joining ATS Route A599:

TATUX-DOPID-Cox's Bazar -APAGO-CHILA-A599- LSO-LINSO



[Map provided by ICAO]

Counter-proposal by IATA:



[Map provided by ICAO]

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ATS Route Name	BOB 02
State Priority	
IATA Priority	HIGH
Requested by (when)	IATA (05/11/2021: ATM/SG/9)
States/Administrations Involved	India, Myanmar (Kolkata, Yangon FIRs)
Route Description	<p>KAKID 203833N 0865951E – TEBOV 202504N 0915949E – Mandalay (MDY)</p> <p>Counter proposal by India:</p> <p>Eastbound: Q10 - TATUX - DOPID - MDY.</p> <p>Westbound: MDY - DOPID - KAGUL - Q11.</p>
Flight Level Band	All suitable flight levels
Benefit (fuel, environmental)	<p>Narrow body fleet: 50 NM / 6 minutes, 228 kg fuel, 750 kg CO₂ per flight, 83 tonnes fuel, 274 tonnes CO₂ annually</p> <p>Wide body fleet: 50 NM / 6 minutes, 450 kg fuel, 1.5 tonnes CO₂ per flight, 164 tonnes fuel, 548 tonnes CO₂ annually</p>
Operational Information (potential airlines, flight frequency, potential city pairs)	<p>About 110 flights per week</p> <p>Africa/South Asia – Far East, Southern India – East Coast of the United States</p>
<p>Remarks: The proposed route would not only provide efficient connection over Bay of Bengal, but it would also help in de-congesting ATS routes A791, B465, Q19 and Q20. At BOBTFRG/3: In order to conduct better assessment, India requested IATA to provide the analysis of the fleet equipage in ADS-C/CPDLC and PBCS.</p> <p>(08/08/2022)India in its</p>	

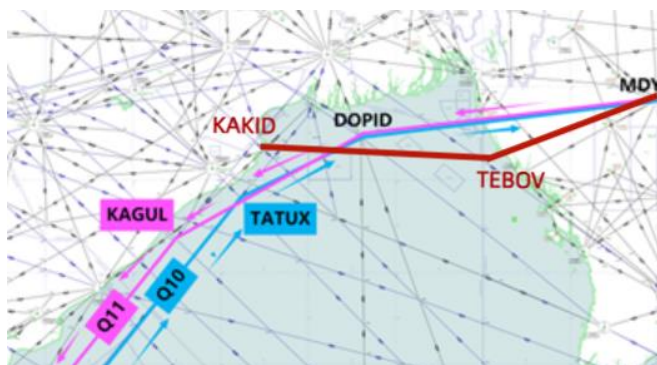
assessment on BOB01 & BOB02 commented the proposed routes are outside the SUR and VHF coverage imposing unnecessary restrictions for all other cross-cutting routes. Therefore proposed alternatives as below:
Eastbound aircraft via Q10:
TATUX - DOPID - MDY.
Westbound aircraft: MDY - DOPID - KAGUL - Q11. India stated this would improve the availability of getting optimum flight levels (well covered by SUR and VHF in Kolkata FIR) and require the approval of Bangladesh and Myanmar.

ATMSG/10: Bangladesh commented that India's counter-proposal overflies the designated established military areas, so Bangladesh needs to consult with the military authorities.

(16/11/2022) In response to India's concerns about SUR and VHF coverage, IATA suggested that with the issuing of the ADS/C & CPDLC mandate, PBCS-equipped aircraft could operate on this proposed route. Regarding the military area, IATA pointed out that the danger area VGD-31 was permanently removed; thus, the possible route connecting DOPID (India proposed waypoint)-TEBOV is not affected by the consequent restrictions(see the Map provided by IATA). Considering the complexity of this airspace, IATA preferred this route to be retained separately and discussed in tandem with BOB01.

BOBTRG/4: Considering the complexity and constraints in

Counter-proposal by India vs original proposal by IATA:



[Map provided by ICAO]

Possible route overflies VGD-31(permanently removed):



[Map provided by IATA]

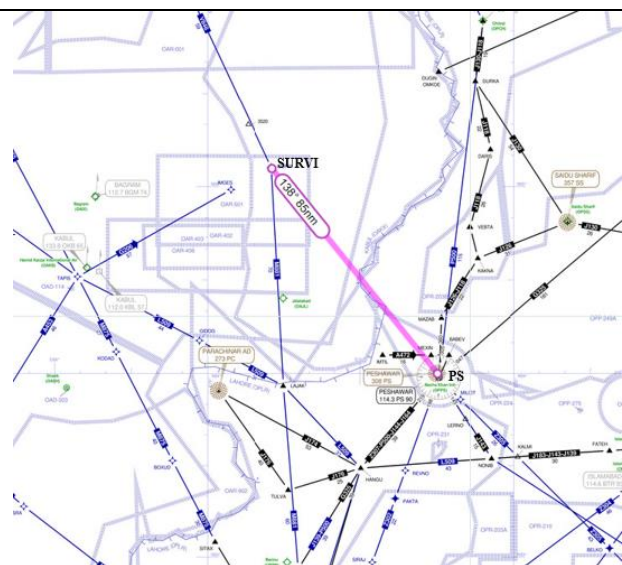
BOBTFRG/4
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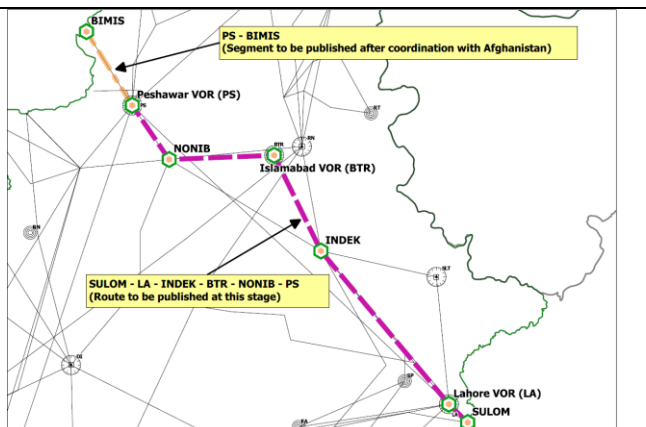
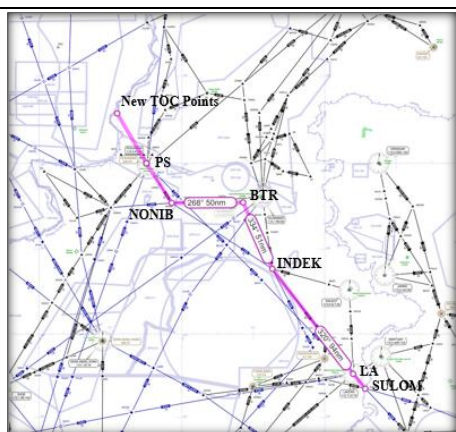
<p>the area, Bangladesh and India wanted to focus on Bangladesh's counter-proposes for BOB 01 in the first place.</p>	
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BOBTRG/4
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ATS Route Name	AFG 01
State Priority	B
IATA Priority	MEDIUM
Requested by (when)	Afghanistan (03/08/2019: AIRARD TF/4)
States/Administrations Involved	Pakistan, Afghanistan (Lahore, Kabul FIRs)
Route Description	Peshawar (PS) 335841.50N 0713100.90E – SURVI 350606.12N 0702512E
Flight Level Band	
Benefit (fuel, environmental)	32 NM / 4 minutes, 400 kg fuel per flight, 957 tonnes fuel, 3,014 tonnes CO ₂ annually
Operational Information (potential airlines, flight frequency, potential city pairs)	AI, AY, TG About 46 flights per week (some operating during winter season only) HEL – BKK/SIN

Remarks: This is an alternative proposal to INDEK-BABEV-SURVI, which will shorten the flight distance. Original proposal: IMTIL – SURVI. At ATMSG/7: Pakistan counter-proposed for this route via SURVI – Peshawar (PS). Pakistan informed the meeting the proposed route between SURVI and PS had been submitted to the relevant authorities of Pakistan for approval. 17/08/2020: Pakistan informed this route proposal was still under consideration by the relevant authorities. At ATMSG/8: IATA assigned “**MEDIUM**” priority; implementation benefits; and operational information. IATA also proposed to review the time restrictions LAJAK-SULOM (1500-2359Z) to make proposal beneficial to more traffic. At SAIOACG/10 and SEACG/27: Pakistan informed this route proposal was still under consideration by the military authority. 15/09/2021: Pakistan informed that the military authorities of Pakistan had approved the following ATS route proposal (bi-directional), on the request of Tajikistan and Uzbekistan: SULOM – Lahore (LA) – INDEK – Islamabad (BTR) – NONIB – Peshawar (PS) – 343433N 0710533E (new TOC points between Afghanistan and Pakistan). The above route proposal was under approval process of Pakistan Federal Government and coordination process with Afghanistan and Tajikistan regarding further route connectivity in Afghanistan airspace and beyond from the new TOC points was ongoing.

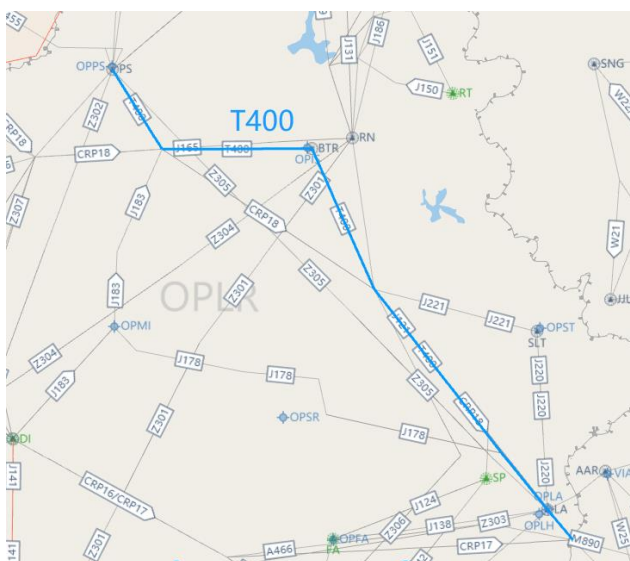




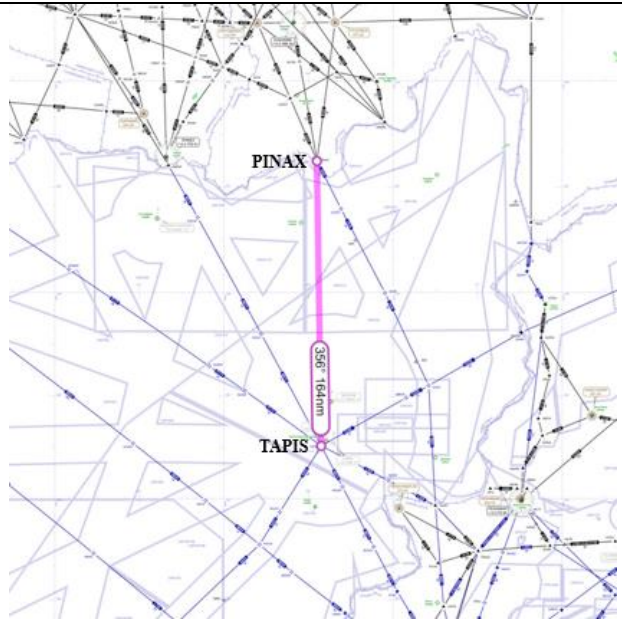
18/02/2022: Upon approval on a new RNAV bi-directional int. ATS route in Lahore FIR by the Federal Government of Pakistan, Pakistan requested a new RNAV Route designator to APAC RO awaiting the response from Afghanistan for further connectivity in Kabul FIR (the last segment from Peshawar VOR to PAK/AFGHAN new TCP BIMIS (Lahore FIR)), and saying a joint PFA will be processed

SULOM – Lahore VOR – INDEK - Islamabad VOR (BTR) – NONIB – Peshawar VOR (PS) – BIMIS 343433N, 0710533E (Pak/Afghan new proposed TCP boundary waypoint), Vertical Limit FL300 – FL410

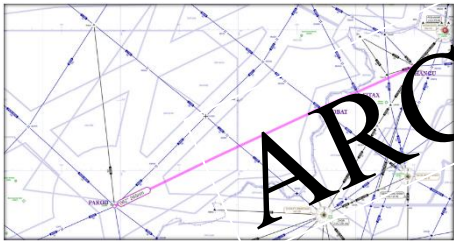
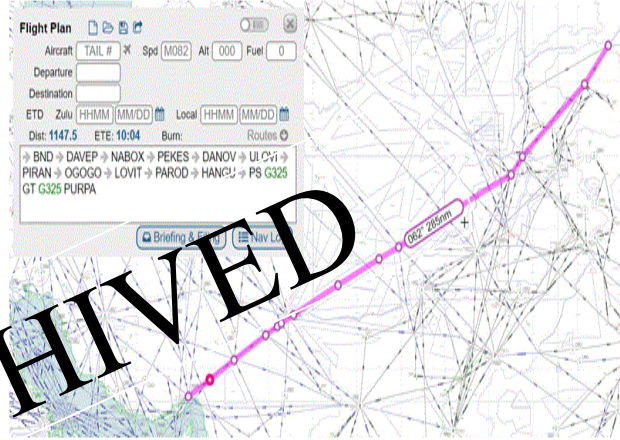
In April 2022, the segment in Lahore FIR, Pakistan was established: SULOM – Lahore VOR – INDEK - Islamabad VOR (BTR) – NONIB – Peshawar VOR as the domestic and **international** route T400. Further route connectivity in Afghanistan airspace and beyond the new TOC points will be further discussed according to the situation in Afghanistan.



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ATS Route Name	AFG 02
State Priority	C
IATA Priority	LOW
Requested by (when)	Tajikistan (03/08/2019: AIRARD TF/4)
States/Administrations Involved	Afghanistan, Tajikistan (Kabul, Dushanbe FIRs)
Route Description	TAPIS 343100.12N 0690900E – PINAX 371500N 0690600E
Flight Level Band	
Benefit (fuel, environmental)	
Operational Information (potential airlines, flight frequency, potential city pairs)	
<p>Remarks: Afghanistan commented that waypoint TAPIS is a converging point for two congested routes, and would review this proposal. At ATMSG/8: IATA assigned “LOW” priority and recommended for deletion.</p> <p><i>Note: continuation of this proposal is 29.007 “TAPIS-PINAX-SORAM-TENRO” in RDGE Middle Asia ATS Route Catalogue.</i></p>	

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ATS Route Name	MID 02 (a)
State Priority	D
IATA Priority	HIGH
Requested by (when)	AIRARD TF/2 (04/05/2018)
States/Administrations Involved	Iran, Pakistan, Afghanistan (Tehran, Karachi, Kabul, Lahore FIRs)
Route Description	Bandar Abbas (BND) 2711.8N 05622.0E – DAVEP 2742.4N 05720.1E – NABOX 2816.5N 05826.0E – PEKES 2859.5N 05952.3E – DANOV 2914.7N 06023.9E – ULOVI 2919.8N 06034.5E – PIRAN 2934.1N 06108.1E – OGOGO 3024.9N 06309.1E – LOVIT 3109.1N 06500.4E – PAROD 3129.0N 06554.0E – A453 – HANGU 3329.1N 07100.3E – Peshawar (PS) 3358.7N 07131.0E – G325 – Gilgit (GT) 3555.2N 07420.1E – G325 – PURPA 3656.5N 07524.4E
Flight Level Band	
Benefit (fuel, environmental)	40 NM / 3 minutes, 600 kg fuel per flight, 1,342 tonnes fuel, 4,262 tonnes CO ₂ annually
Operational Information (potential airlines, flight frequency, potential city pairs)	EK, EY, QR About 43 flights per week
<p>Remarks: High Priority MID 02 (a) preferred over MID 02 (b) if only one route is chosen. 17/08/2020: The proposed entry into Pakistan airspace allows very minimal response time (less than two minutes) for traffic de-confliction at DOBAT and SITAX and other crosser routes.</p>  <p>Pakistan proposed for deletion. At ATMSG/8: IATA assigned "HIGH"</p>	

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<p>priority; implementation benefits; and operational information. IATA preferred this route to be retained in the Catalogue and commented this route could be used for contingency and for aircraft with limited oxygen requirements. At BOBTFRG/3: Pakistan re-affirmed that the proposed route was not feasible.</p> <p>BOBTFRG/4: Pakistan reaffirmed that the proposed route was not feasible and supported archiving this proposal for future possibility and IATA had no objection.</p>	
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