International Civil Aviation Organization

Eleventh Meeting of the Air Traffic Management Sub-Group (ATM/SG/11) of APANPIRG

Singapore, 2 – 6 October 2023

Agenda Item 6: ATM Coordination (Meetings, Route Development, Contingency Planning)

SAIOSEACG MEETING OUTCOMES

(Presented by the Secretariat)

SUMMARY

This paper presents the key outcomes of the Second Meeting of the South Asia, Indian Ocean and Southeast Asia ATM Coordination Group (SAIOSEACG/2).

1. INTRODUCTION

1.1 The SAIOSEACG was established in accordance with Decision APANPIRG/32/5 to create the South Asia, Indian Ocean and Southeast Asia ATM Coordination Group (SAIOSEACG). This group was formed by merging the SAIOACG and SEACG meetings to improve the efficiency of States and ICAO. Its purpose is to identify, plan and implement Air Traffic Management improvements within the airspace that serves the South Asian, Indian Ocean and Southeast Asian regions.

1.2 The SAIOSEACG/2 meeting was held in Bangkok, Thailand from 20 – 24 March 2023. The meeting was attended by 65 participants from States, administrations and international organizations. The relevant presentations and papers are available at icao.int/APAC/Meetings/Pages/2023-SAIOSEACG-2.aspx.

1.3 The meeting is invited to note that the SAIOSEACG has always been the first formal meeting of the year in the ICAO APAC ATM calendar. At the meeting, ICAO introduced ATM information that would be later assessed by other relevant technical groups and finally by ATM/SG. The consideration and input of the broader ATM community at SAIOSEACG help to inform and support the discussion at later groups.

1.4 The key outcomes of the two ad hoc Small Working Groups subordinated to the SAIOSEACG, namely the South China Sea Traffic Flow Review Group (SCSTFRG) and the Bay of Bengal Traffic Flow Review Group (BOBTFRG), are also reflected in this Working Paper.

2. DISCUSSION

Key information update on ATM

2.1 ICAO presented key updated ATM information relevant to the SAIOSEACG meeting on:

- Air Navigation Service Deficiencies List;
- Airspace Safety Monitoring;
- Air Navigation Service USOAP;

- Application of ATC Separation Minima;
- Missing Departure (DEP) Messages;
- Regional Air Navigation Plan;
- Seamless ANS Plan;
- Air Traffic Flow Management;
- AIS-AIM Implementation;
- Regional ATM Contingency Planning; and
- Asia/Pacific Search and Rescue.

Review of Current Operation and Problem Areas

2.2 ICAO presented current Air Navigation Deficiencies in the Air Traffic Management (ATM) and Airspace Safety fields, as recognized by the Thirty-Third Meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/33).

- Regarding the designation of Restricted Areas Deficiencies (*requirements of Annex 2 (Definitions) to ensure that restricted areas are designated above the land areas or territorial waters of a State*). In response to a query from India, Australia informed the meeting that they were expecting to designate 101 RAs as Military Operating Areas (MOAs, as a subset of Danger Areas) to acquit the ICAO deficiency, which was still under coordination.
- India also informed the meeting that they were working to remove the deficiencies regarding restricted airspace and non-submission of Datalink performance monitoring data for Mumbai FIR with an upgraded system of Mumbai ATCC.

2.3 IATA presented a summary of economic and traffic data illustrating the impacts of COVID-19 on the airline industry and the progress of recovery since States have re-opened international borders. Based on the assessment, notwithstanding a relapse of pandemic conditions, and relying on geopolitical events to be resolved, air traffic globally is expected to be fully recovered by 2025 with Asia Pacific being in the later stage.

2.4 IFATCA presented a phased upgrade concept to the South China Sea airspace, involving the implementation of ICAO Standards and Recommended Practices (SARPs) and procedures. The meeting recalled that the current South China Sea airspace structure was introduced in 2002 based on an RNAV10 parallel route network. The upgrade concept was based on the RNP 2 parallel routes network which complied with the *APAC Seamless ANS Plan*. The comparison is illustrated in **Figure 1.**

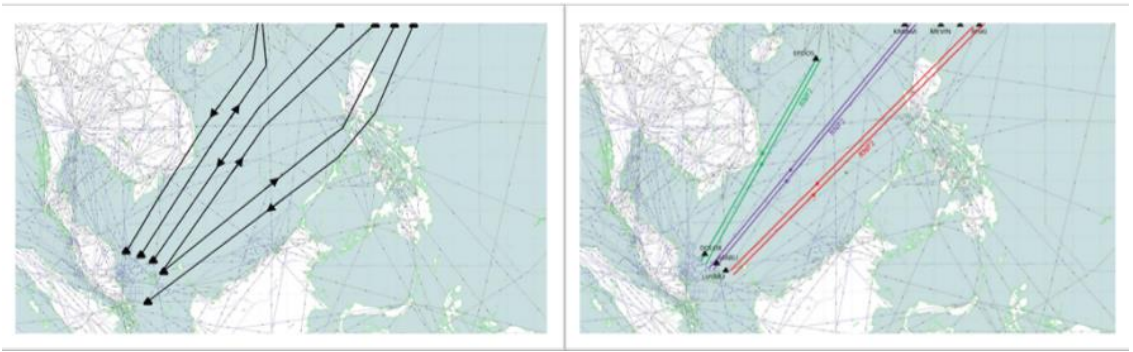

Figure 1: The comparison between the current RNAV 10 route network and the concept RNP 2 route network.

- The proposal received a positive response from IATA. ICAO stressed that the concept of the parallel routes system based on RNP2 operation was in accordance with the *APAC Seamless ANS plan* and in tune with the regional expectations.
- The meeting recognized that any change to the FLAS/FLOS procedures could ripple throughout the whole South China Sea area and require extensive coordination.
- Singapore stated that such extensive proposals would potentially require the re-structure of the SCS main traffic flows, as such, necessitating a comprehensive evaluation of the benefits and safety risks jointly conducted by all stakeholders.

2.5 Hong Kong China reported to the meeting on their effort to optimize the airspace capacity of major trunk routes L642 and M771. The optimization plan was to reduce the minimum aircraft separation from 50 NM to 20 NM.

- As per *ATM/SG Task List* Action Item 10/8, a side meeting of SAIOSEACG/2 was conducted to discuss this matter.
- More details have also been discussed in the following SCSTFRG/11 (Bangkok, Thailand, 4 - 6 July 2023).

2.6 The meeting was updated on the successful enhancement of the 30 NM longitudinal spacing utilization on air routes A461 and M501 within the Manila FIR and Hong Kong FIR. The Philippines and Hong Kong China were planning to reduce the spacing on ATS route A583 to 30 NM by Q4 2023 in preparation for the anticipated return of pre-COVID-19 traffic levels in 2024.

- Indonesia expressed readiness to cooperate with the Philippines on the optimization of ATS route A461.

2.7 Based on the positive result from IATA's survey on fleet equipage, combined with the improvement of the surveillance coverage in Ujung Pandang FIR, Indonesia reported to the meeting that they were ready to apply 30 NM separation and appealed to neighbouring FIRs, which have the same airspace category to implement ATC separation standards among their common boundaries.

- At SCSTFRG/11, Indonesia updated that 10NM surveillance spacing g (or Closer to 5 NM Based on Surveillance Spacing) has been implemented between Jakarta FIR and Ujung Pandang FIR.

2.8 Indonesia presented their solutions for managing missing departure messages, a problem they diagnosed in the first half of 2021. Two main causes were identified: improperly handled departure messages by the system and unpaired radar and Flight Plan (FPL) data. Indonesia has improved their system to minimize missing departure messages through automatic message-sending and alerting of failed departure messaging.

Implementation of CNS-ATM Systems

2.9 India discussed its plan to implement separation minima using Space-Based ADS-B (SADS-B) ATS surveillance System in their oceanic airspace where VHF Voice Communications was not available, according to the criteria of a new separation minima in the 9th amendment to PANS ATM (Doc.4444, Chapter-8 para 8.7.4).

2.10 IATA updated the meeting on its Aircraft equipage and Capacity Survey conducted in 2022 for Asia-Pacific and North Asia, and with an update from previous reports after several more airline fleets have been added to the database.

- The survey specifically asked for aircraft fleet capabilities and operating approvals in the domains of PBCS, Performance-Based Navigation (PBN), Global Navigation

Satellite System (GNSS) Augmentations, Mode Select Secondary Surveillance Radar (Mode S SSR) and System-Wide Information Management (SWIM)

- Regarding PBCS, the percentage of entire fleets in the database that were reported as CPDLC and ADS-C equipped had increased from 56% to almost 68% which had pushed the total percentage of equipped aircraft up to 61.23%. For PBN, all new aircraft added to the database were equipped with some type of PBN capability with regulatory approval. RNP2 capability for en-route increased from approximately 45% to over 50%.

ATS Route Development

2.11 Malaysia presented their phased PBN route construction progress according to ICAO Asia-Pacific PBN Implementation Plan and reported additional expansion plans to the meeting. Plans were announced to extend three existing routes by changing them to PBN routes and to establish new routes by changing two conventional routes to PBN routes.

- Malaysia reported to the meeting on their plan to apply 20NM longitudinal separation to TOC points between neighbouring FIRs within category S airspace as well as their goal of improving all ATS routes to RNAV2 within the surveillance and DCPC covering range together with the application of 10NM separation in the future.
- Subsequently, the above-mentioned 5 new ATS route proposals were incorporated into the *Asia/Pacific Region ATS Route Catalogue* as ***SCS19, SCS20, SCS21, SCS22, and SCS23.***

2.12 Thailand introduced the cooperation processes among States concerned to realize the operation of direct routes connecting Hanoi, Bangkok, and Phnom Penh. They emphasized that the direct route would provide clear benefits to the user. Viet Nam Airlines' analysis showed that it could reduce flight time by 12 minutes and save 750 kg of fuel per flight.

- Viet Nam supported the initiative by Thailand and added that the new route would be further realigned with the existing primary routes within Hanoi FIR.
- Subsequently, the above-mentioned new ATS route proposals were incorporated into the *Asia/Pacific Region ATS Route Catalogue* as ***Mekong01***.

2.13 The *Asia/Pacific Region ATS Route Catalogue* has been reviewed and updated as version 22.1. As six new ATS route proposals were formally submitted by Malaysia and Thailand, the meeting considered those to be incorporated in the Catalogue. This topic will be further discussed in a separate WP.

2.14 The meeting noted the cooperation between India and Malaysia regarding the realignment of ATS Route N877, together with a series of optimization on adjacent routes, which could bring more efficiency in flight operation in the Bay of Bengal route network. Based on the agreement, the realignment and the consequent changes would take effect from 18th May 2023 as per the AIRAC Cycle.

2.15 Indonesia presented information regarding the User Preferred Route (UPR) implementation progress within Indonesian airspace and the initial cross-border UPR implementation between Indonesia and the United States. Indonesia also informed the meeting of their experience in implementing UPR and their willingness to further explore cross-border UPR cooperation with adjacent States.

2.16 Regarding the *Asia/Pacific Region ATS Route Catalogue* proposal BOB01 in the Bay of Bengal, the ICAO APAC Regional Sub-Office hosted a special coordination meeting (Video

Teleconference, 11 May 2023), between Bangladesh and India with support from IATA. The Special coordination meeting formally agreed to establish the BOB01 Route proposal connecting SURUP - KAKID – GOLAN - (WPT1) - (WPT 2) - Chattogram (CTG). This bi-directional route option saves about 55NM, expected to benefit about 110 weekly flights, as shown in Figure 2:

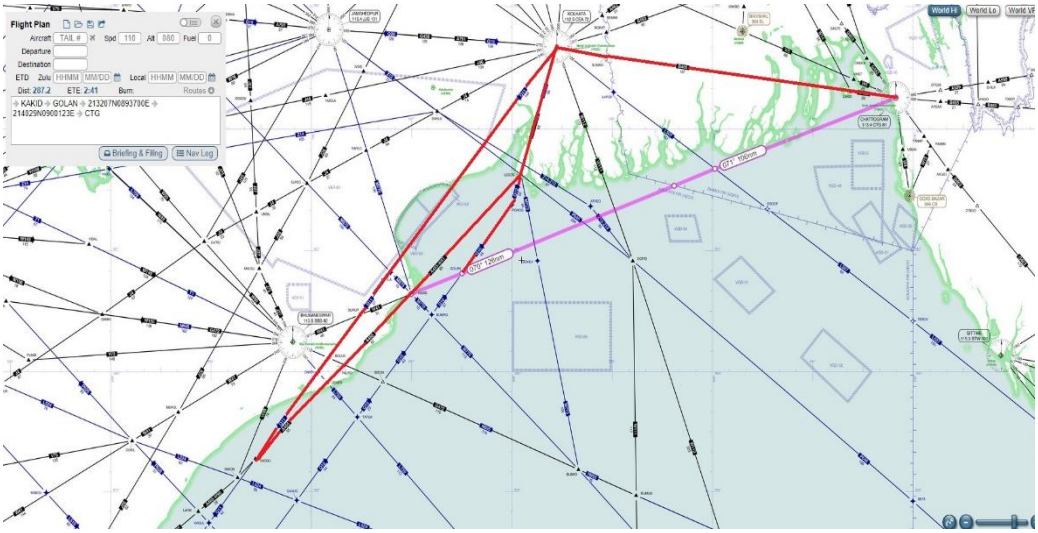

Figure 2: Formally agreed BOB01 Route Proposal (Pink line – Agreed Direct Route, Red lines – Present routes)

ATM Contingency Plans and Search and Rescue

2.17 India informed the meeting of the discrepancy between the *ICAO APAC Regional Contingency Plan* and the Annex-11 provisions on the contingency route designator.

- ICAO recognized this as an issue and informed the meeting that it would be addressed in the updated version of the Regional ATM Contingency Plan (SAIOSEACG Action Item 2/3).

ANSP Coordination and Civil/Military Cooperation

2.18 Indonesia presented lessons learned from major ATM contingency events in the last three years, including the need for close cooperation and collaboration with military authorities and civil aviation authorities responsible for adjacent FIRs in a harmonized manner.

- Singapore emphasized the importance of implementing new capabilities such as Flight and Flow Information for a Collaborative Environment (FF-ICE) and System Wide Information Management (SWIM) to improve the resilience of the ATM system during contingency scenarios.
- ICAO stressed the importance of having appropriate contingency management in place and conducting contingency exercises.

2.19 India informed the meeting that they were actively operating civil-military cooperation units called Regional Airspace Management Cells (RAMC) under the Flexible Use of Airspace concept and achieved significant economic benefits and carbon dioxide reduction effects. They also revealed plans to establish additional operating organizations for civil-military cooperation units in the eastern and western regions.

The Updates on the Priority Areas of the South China Sea Traffic Flow Review Group (SCSTFRG)

Priority Area 1: A1/A202

2.20 Action items under this Priority Area were to enhance the longitudinal spacing on ATS route A1 and A202 to 20 NM and develop a parallel route to A1.

- 20 NM longitudinal spacing has been implemented on ATS route A1 since 2020.
- The development of a parallel route to A1 was still under the feasibility study stage. The biggest sticking point is the direction of the parallel routes, on which the States/administration concerned have not yet reached a preliminary consensus.

Priority Area 2: L642/M771

2.21 The goals were to reduce longitudinal spacing to at least 20 NM and to investigate the possibility of implementing parallel routes for L642 and M771.

- 20 NM separation has already been implemented on L642 and M771 between Singapore and the Ho Chi Minh FIR boundary.
- Hong Kong China expressed their full readiness to implement the 20NM longitudinal spacing on L642 and M771 and took the leading role to speed up the progress of implementation. Hong Kong China proposed to conduct a trial operation on L642 and M771 in Q3 2023. Although some details still need to be discussed, it was affirmed by China and Viet Nam that their best effort would be carried out to reach the common goal.
- The group agreed that the discussion on the proposed implementation of parallel routes to L642 and M771 will be deferred, pending the results of the enhancement of longitudinal spacing.

Priority Area 3: A461/A583/L625/N892

2.22 The action item was to enhance the longitudinal spacing on ATS routes A461, A583, L625, and N892 to at least 50 NM, with planning for 30 NM or less.

- A461/M501: Phase 1 and Phase 2 of 30 NM longitudinal spacing implementation between Hong Kong China and the Philippines were completed.
- A583: The Philippines proposed a side meeting with Hong Kong China to discuss the details of Phase 3 Implementation which was planned to commence in Q4 2023.
- N892 & L625: The Philippines confirmed that the implementation of 50NM longitudinal spacing would be moved to a later date due to internal issues that need to be resolved first.

Priority Area 4: Review of existing FLAS/FLOS operating within the South China Sea

2.23 Through the updated data submitted by South China Sea States/Administrations prior to the SCSTFRG/11 (Bangkok, Thailand, 4 - 6 July 2023), the ICAO APAC Regional Sub-Office has corrected the data from the previous version of the Chart to provide an overview of the FLAS currently operating in the South China Sea airspace among the major routes, as illustrated in **Chart 1**.

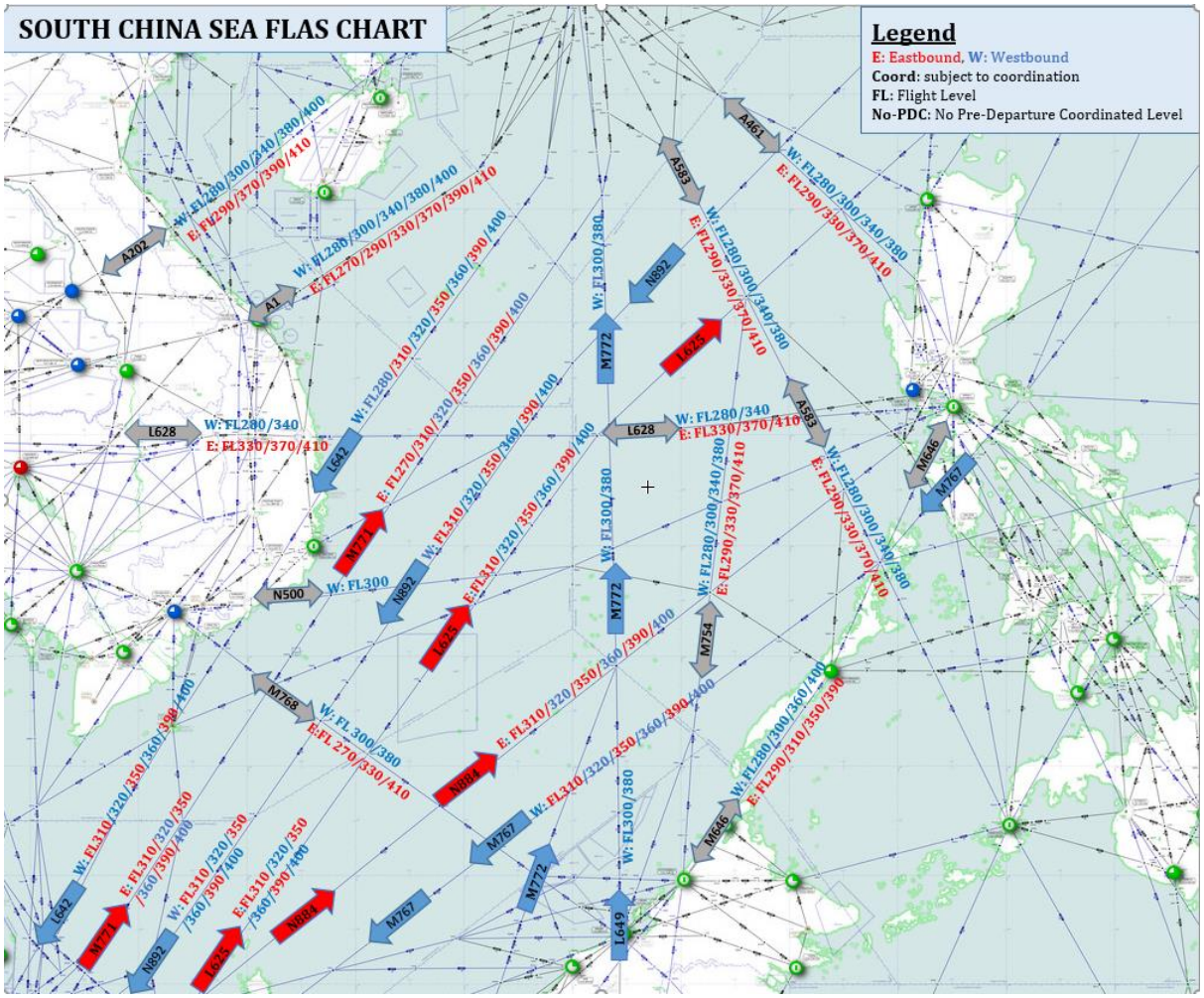

Chart 1: FLAS/FLOS among the ATS Routes (Updated in July 2023)

2.24 Discussion on South China Sea FLAS/FLOS has been going on for several years. ACCs have increasingly relied on the FLAS system and have developed a series of risk response plans, such as the Large-Scale Detour Procedure and flexible coordination mechanism. In fact, the current FLAS system has proven to be reliable, however, the following limitations should be taken into consideration:

- As the most economical level may not be assigned to the flights, the desired gain in fuel efficiency and emissions may be lost.
- Frequent flight-level changes are made to accommodate the FLAS requirements across various route segments, which may result in unsafe situations.
- High demands for extra coordination resulting in an increase in the ATCOs' workload, particularly under adverse weather conditions.
- Lack of flexibility: In comparison to the original concept, some of the secondary crossing routes are now busier than the primary routes and it is necessary to make timely adjustments.
- Systemic risks associated with human errors. The likelihood of coordination errors during the ATC-to-ATC transfer of control may increase when transitioning from FLAS operation to the Large-Scale Detour procedure.
- Safety issues caused by the transition from non-standard FLOS to standard FLOS at the TOC points, particularly at the boundary of the SCS area.

- The capability and efficiency of current FLAS might be insufficient to cope with future traffic growth.

2.25 The group also recalled the Principles and Guidelines of the Optimization of SCS FLAS/FLOS. The following aspects should be taken into account when optimizing the existing SCS FLAS/FLOA :

- Normalization of the SCS-modified Single Alternative FLOS to the ICAO Standard Single Alternative FLOS as per Annex 2 Appendix 3a;
- Service performance level commensurate with the CNS/ATM system capabilities in accordance with the expectations of the *Asia/Pacific Seamless ANS Plan*;
- Harmonized and consistent service provision of separation and procedures across the SCS area to reduce human errors;
- removal of FLAS to allow more opportunities for better flight level allocation according to fleet capability;
- Recognition of the gap between current practice and best practice by ANSPs concerned; and
- Airspace users' expectations and needs for improved capacity, efficiency and safety including economic and environmental considerations.

2.26 In view of the above-mentioned facts, the goal for the SCSTFRG should be the removal of FLAS in the SCS area to meet the *APAC Seamless ANS Plan*'s expectations. This cannot be achieved without a systematic and holistic roadmap supported by all stakeholders.

2.27 However, the SCSTFRG Priority 4 (optimization of FLAS/FLOS operation) cannot be considered as an isolated project; it has significant interconnectivity with the SCSTFRG Priority 1, 2 and 3 (reduction of longitudinal separation on primary routes). Reducing the longitudinal separation could enhance route capacity and improve airspace efficiency.

Report on the Main Tasks of the Bay of Bengal Traffic Flow Review Group (BOBTFRG)

Bay of Bengal Flight Level Allocation Scheme (FLAS)

2.28 ICAO presented the Bay of Bengal Flight Level Allocation Scheme (FLAS) Chart (Figure 3), and urged the States concerned to review the current FLAS operations and plan for improved FLAS to enhance airspace efficiency in the BOB airspace. This review would fulfil the tasks specified in the BOBTFRG Terms of Reference relating to the Asia/Pacific Seamless ANS Plan and expected traffic recovery from the COVID-19 pandemic.

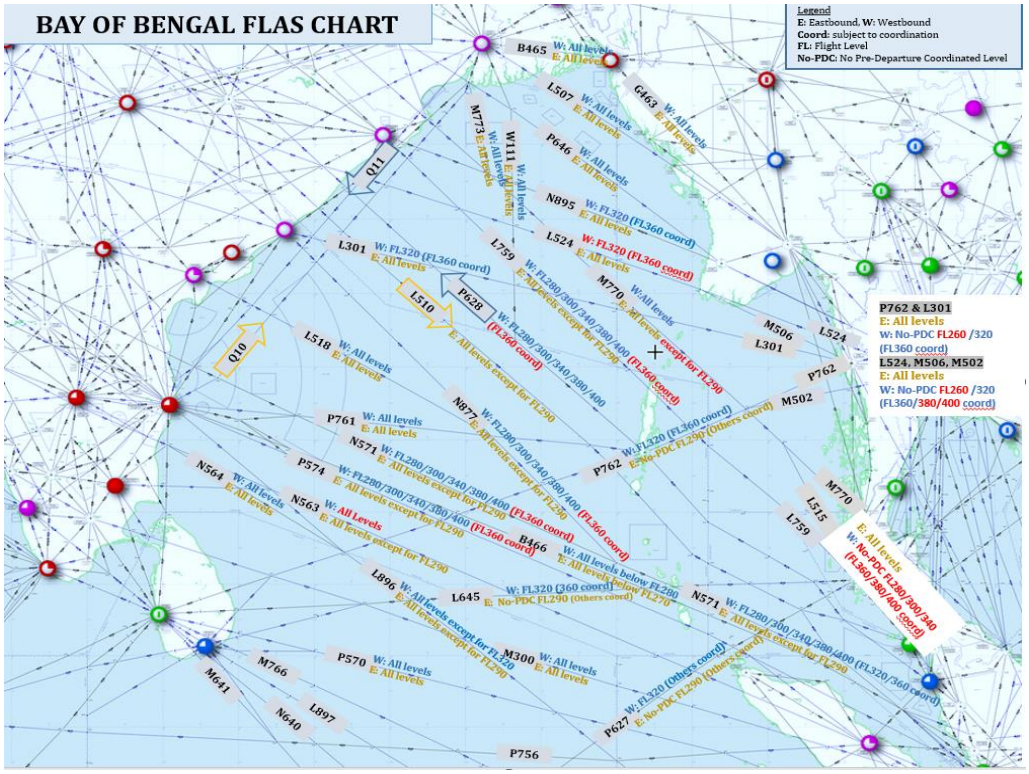

Chart 2: Bay of Bengal FLAS Chart (Updated in March 2023)

Discussion on the feasible implementation timelines for the improved horizontal separation standards.

2.29 The group recognised that despite available capabilities, some States still apply conservative separation standards than prescribed, contributing to the growing congestion. Noting the objectives and the tasks under the BOBTFRG, the group have prioritized the implementation timelines for the improved horizontal separation standards according to demonstrated performance capabilities.

- Identify constraints and the CNS/ATM capabilities that are needed to implement the optimal longitudinal separation;
- Define the timelines, milestones and dependencies for actions that should be followed;
- firm up with the mandate date for the ADS-C/CPDLC, which was identified as the key enabler for airspace enhancement;
- Draft the trial implementation plan for the PBCS over the Bay of Bengal area including the phased detailed action plans, considering the following:
  - **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 requirement;
  - **Phase 3** - permanent implementation of 30 NM longitudinal / 23 NM lateral separation with PBCS supports.

2.30 Several plenary meetings have been conducted to facilitate the discussion and reached the following outcomes:

- IATA provided information on options for reducing separation minima in the Bay of

Bengal and supporting PBCS non-exclusive mandate trials based on airline equipage and capability data.

- As requested by India, Myanmar agreed to review the possibility of implementing 50 NM longitudinal separation to be applied based on the current capability RNAV 10 (RNP 10) among the routes L301 (WB: FL320 & FL360; EB all levels) and L507 (All levels) as prescribed in the of LoA.
- India and Malaysia to start the trial on Route N571 between RNP4/RNP2 approved aircraft on an opportunity basis between Kuala Lumpur and Chennai, with a possibility to extend to other routes at a later stage.

2.31 The meeting is invited to note that the upcoming BOBTFRG/5 was planned to be held in Bangkok from 6-8 December 2023.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper; and

b) discuss any relevant matters as appropriate.

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