International Civil Aviation Organization

The Fourth Meeting of the South Asia, Indian Ocean and Southeast Asia ATM Coordination Group (SAIOSEACG/4)

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Agenda Item 7: ANSP Coordination and Civil/Military Cooperation

Strengthening Cross-FIR Collaboration to Enhance Regional Operational Efficiency

(Presented by CHINA)

SUMMARY

This paper presents a strategy to strengthen cross-FIR collaboration and enhance regional operational efficiency in Southeast Asia. It details how harmonizing operational procedures, reducing handover separation margins, implementing AIDC and optimizing ATFM measures can address the growing challenges of increasing air traffic and adverse weather conditions. The paper reviews parallel route planning, separation reduction trials on key routes, and the importance of standardized information sharing for diverted flights. Overall, it proposes actionable measures to promote a unified, resilient ATM system across FIR borders. These initiatives are vital in addressing evolving modern airspace demands.

1. INTRODUCTION

1.1 Over the past years, concerted initiatives driven by ICAO groups such as SAIOSEACG and SCSTFRG have significantly enhanced air traffic management safety, capacity, and efficiency across Southeast Asia. This progress has been underpinned by an increasing degree of cooperation among the region's various States and administrations. Notably, cross-FIR collaboration has emerged as a vital element in furthering operational integration, as it helps address differences in procedures that have long been inherent between domestic and international operations.

1.2 A critical example of these procedural differences can be seen in the handling of handover separations. Within a single State or administration, transfer separation parameter may be reduced to as little as 10 nautical miles, whereas cross-FIR operations generally mandate a 20-nautical-mile buffer. This extra margin reflects the current level of interagency trust and coordination, yet it also highlights the untapped potential for harmonizing ATM procedures. By reducing such discrepancies, the region can achieve a more unified and efficient operational framework that fully leverages existing collaborative capabilities.

1.3 With the imminent challenges posed by the approaching rainy season and an overall increase in traffic demand, strengthening cross-FIR cooperation is not merely advantageous—it is imperative. Overcoming the operational challenges of diverse safety cultures, varying training standards, and distinct procedural norms requires a long-term, systematic approach. This paper outlines recent operational experiences and proposes targeted measures to deepen cross-FIR collaboration, ultimately enhancing regional capacity, safety, and efficiency.

2. DISCUSSION

A1 Parallel Route Planning

2.1 The implementation of parallel routes along the A1 has long been recognized as a key driver in bolstering regional safety and ensuring smooth traffic flow. Over the past decade, States and Administrations along A1 have collaboratively explored this initiative, resulting in five candidate proposals that focus primarily on optimizing traffic flow patterns. Historically, the relatively lower traffic volumes on A1 permitted a gradual approach; however, since 2025, when traffic levels have approached or even exceeded capacity limits, the urgency to establish parallel routes has grown markedly.

2.2 Given these conditions, it is critical that stakeholders accelerate efforts to reach a consensus on a feasible route roadmap. Establishing parallel routes will not only raise the operational "ceiling" by increasing airspace capacity but also provide a foundation for long-term safety enhancements. Recognizing the inherently lengthy nature of airspace reconfiguration and subsequent evaluations, all stakeholders are encouraged to actively engage in harmonizing and expediting the A1 parallel route planning process.

Implementation of AIDC

2.3 The introduction of AIDC between the Sanya and Hanoi ACC has yielded demonstrable operational benefits. By reducing daily telephone coordination by an average of four hours, AIDC has streamlined communication, significantly enhanced efficiency, and minimized the potential for human error. This improvement in cross-FIR coordination serves as a model for how technology can facilitate smoother interagency interactions.

2.4 Despite its success, challenges remain—particularly concerning the timing and consistency of TOC and AOC messages. Differences in safety culture and operational practices have occasionally resulted in premature TOC transmissions, message omissions, or delayed AOC responses. Sanya ACC is committed to addressing these issues and looks forward to extending AIDC implementation to other regions, such as the Ho Chi Minh ACC, to foster even greater operational integration across the region.

L642/M771 Reduced Transfer Separation Trials

2.5 Trials aimed at reducing handover separation on routes L642 and M771—from the traditional 50 nautical miles down to 20 nautical miles—have demonstrated significant improvements in operational efficiency. During the designated trial period (typically from 0200 to 1200 UTC), an average of 36 flights per day have operated within the 20- to 50 NM separation range, resulting in more efficient airspace usage and enhanced traffic flow.

2.6 Looking ahead, there is strong support for extending these trials to a full 24-hour operation to capture comprehensive data across all operational periods. Additionally, under specific scenarios such as those involving LSWDCP, reverting to a 50 NM separation may be necessary. Therefore, further collaboration is needed to assess transitional separation options—such as a temporary 30 NM—tailored to varying traffic and weather conditions..

A1/A202 Transfer Separation Reduction Research

2.7 A1 and A202 are identified as one of the region's busiest corridors, with their operational efficiency having a substantial impact on overall airspace capacity. In view of the increasing traffic levels, Sanya ACC has initiated research into reducing handover separations along these routes to 15 nautical miles—and potentially even to 10 nautical miles. This research encompasses a broad

spectrum of evaluations, including safety and capacity assessments, fast-time simulations, human-in-the-loop testing, and flight simulator validations.

2.8 The primary goal of this research is to increase the operational capacity of these critical air routes while maintaining stringent safety standards. By aligning this research with the objectives of the APAC Seamless ANS Plan, regional stakeholders can work together to implement evidence-based measures that ensure both enhanced capacity and operational integrity. Close collaboration among all relevant FIRs is essential to standardize procedures and achieve these ambitious targets.

Enhancing Airborne Rerouting Efficiency

2.9 Airborne rerouting is an indispensable tool in managing disruptions caused by weather, airspace restrictions, or unforeseen events. However, within the high-density airspace of Southeast Asia, the traditional "approval-first" process often leads to significant delays in the air—especially during peak periods or severe weather conditions such as typhoons. Such delays can compromise operational safety and reduce the overall responsiveness of the system.

2.10 To overcome these challenges, it is proposed that the region adopt a "notification-based" rerouting process underpinned by pre-coordinated pathways. By pre-establishing dynamic rerouting routes, the system can shift from an "approval-first" model to one where rerouting is implemented immediately, with post-facto notifications ensuring that all relevant parties are informed. This transition would markedly improve the responsiveness and flexibility of cross-FIR operations, particularly along heavily trafficked corridors such as A1, L642, and M771.

Information Sharing for Diverted Flights

2.11 Given the prolonged rainy season in Southeast Asia, flight diversions are increasingly common and pose unique challenges for air traffic control. Due to the region's distinctive geography, certain air routes are situated close to FIR boundaries, causing diverted flights to inadvertently enter adjacent areas. These incursions can lead to complications in command and control, as controllers in the receiving FIR may have incomplete situational awareness or limited surveillance capabilities.

2.12 To mitigate these issues, it is imperative that neighboring States and administrations establish a clear and robust information-sharing mechanism. Such a mechanism should define the command responsibilities based on FIR boundaries and encourage early notification—preferably at least 15 minutes in advance—for flights planning to divert into another FIR. This preemptive communication will help ensure that all stakeholders can adjust their operations accordingly and maintain overall airspace safety.

Coordination on Lateral Deviations Near Handover Points

2.13 During the en-route control phase, maintaining appropriate lateral separation between aircraft on bidirectional routes is crucial for both safety and capacity enhancement. In practice, Sanya ACC has implemented lateral offset procedures on the A1 route to reduce the risks associated with high-density traffic and to prevent overlapping radar identifications. This approach minimizes the need for intricate coordination near handover points.

2.14 To further streamline operations, it is recommended that similar lateral offset procedures be adopted across the related States and Administrations if possible. Even in cases where full implementation is challenging, providing a tolerance zone—such as allowing lateral deviations within 10 nautical miles of the handover point—could help reduce operational complexity and enhance safety margins. A consistent approach to managing these deviations would contribute significantly to a more integrated regional traffic flow.

Optimization of ATFM Measures

2.15 Existing ATFM measures—including level restrictions, MIT, and check-for-startup—continue to impose significant workloads on controllers, potentially increasing the risk of human error. Recognizing this, there is a pressing need to optimize these measures to reduce controller burden while maintaining safety and efficiency. In particular, transitioning towards ATFM solutions that rely on CTOT (Calculated Take-Off Time) or Flow Rate-based strategies is strongly recommended.

2.16 By shifting the responsibility for ATFM to dedicated personnel and automating certain processes, the region can improve its overall operational efficiency. For example, employing Flow Rate metrics—such as accepting a specific number of aircraft within defined time intervals (e.g., two aircraft per 15 minutes or five per 30 minutes)—can streamline operations. In cases where ANSPs have the capability to issue CTOT, this should be prioritized; where not, a well-defined Flow Rate system offers a viable alternative to maintain a safe and efficient airspace environment.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) establish a cross-FIR roadmap for A1 parallel route development;

c) encourage all stakeholders to implement feasible and actionable collaboration measures on the discussed topics;

d) discuss any relevant matters as appropriate.

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