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 5: ATS Route Development

Proposal for Advancing Parallel Route A1 Implementation with the Background of China Upper ATS Routes Network Planning

(Presented by CHINA)

SUMMARY

This paper presents an analysis of the necessity and feasibility of establishing parallel routes for ATS Route A1. A1 is a critical air corridor of the Asia-Pacific region ATS routes network, which connecting Southeast Asia and Northeast Asia. And A1's BUNTA to IKELA segment is also the vital component of China future Upper ATS routes network planning, which will has a significant improving for the safety and efficiency of the APAC. With global traffic levels rebounding to pre-2019 figures and expected to surpass them in 2025, the existing airspace structure faced increasing congestion and operational challenges. The paper discussing current constraints, progress made in route planning, and proposed solutions, including implementing RNAV2-based parallel routes. It also recommends developing an implementation roadmap under ICAO coordination to ensure an orderly and efficient transition to the new airspace structure.

1. INTRODUCTION

1.1 The A1 route, serving as a vital air corridor connecting Southeast Asia to Northeast Asia, has long been a focus for the Asia-Pacific region. Prior to 2019, this busy route—recognized as the highest priority route in South China Sea—experienced rapid growth at an annual rate of 11.9% and, during 2019, regularly reached daily peak operations of approximately 600 flights. Since 2024, traffic volumes have been steadily approaching those 2019 levels, with expectations that 2025 may meet or exceed previous peak figures. However, alongside the growth in traffic demand, the operational challenges on A1 have escalated significantly, resulting in a considerable increase on ATC workload.

1.2 The proposal to establish parallel routes along the A1 corridor has been a part of the roadmap for the construction of China Upper ATS routes network planning, which played an important role in connecting China and the APAC. With the mounting demand and the current operational pressures, the implementation of parallel routes is critical not only for addressing present challenges but also for sustaining the long-term development of regional civil aviation. Over the past decade, coordinated efforts among the affected States and Administrations have led to substantial progress in formulating this concept. To advance from consensus to implementation, it is now imperative to adopt a well-defined roadmap that will guide the systematic and efficient transition of A1 from a single bidirectional route to dual parallel routes.

2. DISCUSSION

Current Challenges

2.1 ***Rapid Growth in Traffic Volumes.*** In 2019, the route A1 in Sanya FIR reached a peak of 610 daily flight movements, approaching the operational capacity limits of air traffic management. Since 2024, traffic has rebounded significantly, with projections indicating that 2025 traffic levels will match or surpass 2019 levels.

2.2 ***Limited Availability of Flight Levels.*** The increasing traffic on less-busy crossing routes has exacerbated challenges related to Flight Level Allocation Schemes (FLAS). Data analysis shows that pilots flying from Southeast Asia to Northeast Asia primarily prefer FL290, FL330, and FL370, leading to congestion at these levels and limited altitude availability.

2.3 ***Traffic Concentration During Peak Periods.*** Peak traffic on A1 within Sanya FIR is highly concentrated during nighttime hours. Both southeast-bound and northeast-bound flows reach peak volumes simultaneously, further increasing congestion and operational complexity.

2.4 ***Structural Changes in Traffic Flow.*** The evolving structure of traffic flow has also led to increased conflict points: approximately one-quarter of flights within Sanya FIR must adjust flight level, a situation driven by the growing operations at Sanya and Da Nang airports, as well as by frequent convergences at similar flight levels.

2.5 ***Complex Operational Environment.*** The route A1 faces additional complexity due to adverse weather conditions requiring route deviations, turbulence, and growing altitude restrictions imposed internally or externally. These factors make the airspace significantly more complex than in 2019.

2.6 ***Limitations of Tactical Solutions.*** To mitigate rising workload and operational risks, ANSPs have implemented tactical measures, such as maintaining strategic offsets between aircrafts and using ATFM measures to balance capacity. However, these short-term solutions do not address the core issue—limited airspace capacity—which necessitates strategic long-term planning, including the establishment of parallel routes.

Progress in Planning

2.7 ***Consensus on the Necessity of Parallel Routes.*** The importance of establishing parallel routes on A1 is widely recognized. Stakeholders have been studying potential implementation plans for over a decade, and there is unanimous agreement on the need for this enhancement.

2.8 ***Alignment on the General Concept, Differences in Specifics.*** While there is broad consensus on the need for parallel routes, discussions continue regarding the specific alignment of the new routes. Early studies proposed four potential configurations, and by 2024, additional alternatives were considered. Currently, stakeholders are deliberating between two primary candidate plans, with ongoing coordination to reach a final agreement.

2.9 ***Further Details Require Resolution.*** Even after establishing the overall traffic flow direction, several details require further analysis and agreement—such as the exact locations of entry/exit points, lateral separation between the two new routes, navigation specifications, and the allocation of available flight levels. Addressing these issues through coordinated research and dialogue is essential to move from concept to operational reality.

Proposed Solution

2.10 Considering the existing route structure, the recommended solution within the Sanya FIR involves: Southwest-bound parallel uni-directional route: SYT13-BUNTA; Northeast-bound parallel uni-directional route: ITBAM-IKELA. The conventional ATS route A1 would be replaced by these newly designated parallel uni-directional routes.

Proposed parallel uni-directional routes (Within Sanya FIR)

2.11 After assessment by the CNS department, Sanya FIR has basically achieved VHF and radar surveillance coverage at altitudes above 4500 meters.

2.12 To ensure seamless operations, it is proposed that the new routes adopt the RNAV2 navigation specification standard—a criterion already met by over 98% of flights on A1, thereby avoiding additional burdens on airlines. Additionally, a lateral separation of greater than 10 nautical miles is recommended between the parallel routes, subject to further coordination. If feasible, such spacing would enable simultaneous use of identical flight levels on both routes, significantly improving airspace efficiency.

Recommendations for a Roadmap

2.13 Years of collaborative efforts among States and Administrations along the route A1 have now laid the groundwork for moving from preliminary discussions to substantive implementation. Historically, extensive challenges have hindered the formulation of a definitive timeline and plan; however, current conditions are more favorable, and a spirit of “seeking common ground while reserving differences” has gained traction.

2.14 To facilitate a meaningful transition from a single bidirectional route to a system of dual parallel routes, it is recommended that, under ICAO guidance, involved stakeholders develop a targeted implementation roadmap such as follows: achieve consensus on the parallel route configuration by 2025; conduct comprehensive safety evaluations and initiate trial operations in 2026; and, by 2027, realize formal operational status for the parallel routes.

2.15 Leveraging the ICAO platform, along with the existing collaboration among the four ACCs cooperation or through the formation of a dedicated working group, will enable stakeholders to share progress and resolve specific operational details expeditiously. Critical aspects such as allocation of flight levels for different route directions and destinations, flight level usage under the LSWDCP, reserved flight levels for crossing routes, and emergency procedures and contingency planning must be addressed collaboratively to facilitate subsequent safety assessments and stakeholder communications.

2 ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) review the feasibility and necessity of implementing parallel routes A1；

c) discuss on implementing parallel route A1 initiative in details, aimed at making consensus with all stakeholders;

d) encourage the joint development of an implementation roadmap for establishing parallel routes along the ATS route A1;

e) discuss any relevant matters as appropriate.

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