International Civil Aviation Organization

The Third Meeting of the South Asia, Indian Ocean and Southeast Asia ATM Coordination Group (SAIOSEACG/3)

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Agenda Item 3: Review of Current Operations and Problem Areas

ADVANCING REGIONAL COLLABORATION IN SANYA FLIGHT INFORMATION REGION

(Presented by China)

SUMMARY

This paper presents the increasing demand for air traffic in Southeast Asia, particularly within the Sanya Flight Information Region (FIR), where daily flight volume has risen. Recognizing the need to address this increase and enhance air traffic management efficiency, regional cooperation and integrated services are considered essential. The paper elaborates on Sanya FIR's strategy to improve in-flight rerouting, AIDC, contingency response collaboration, and reducing longitudinal transfer parameters, all aimed at strengthening the safety and efficiency of regional civil aviation

1. INTRODUCTION

1.1 The complexity of air traffic in Southeast Asia is particularly pronounced, with numerous FIRs and dense traffic requiring frequent transitions between FIRs during flights. In such a high-density and high-frequency operational environment, integrated air traffic services are essential. The core of integrated services lies in providing seamless and coordinated air traffic services, which not only simplifies pilot operations and reduces potential errors due to information switching but is also vital for maintaining airspace safety.

1.2 Since 2023, the traffic demand in Southeast Asia has been rapidly recovering. According to data from the Sanya Area Control Center, the average daily flight volume in the Sanya FIR reached 2,183 flights in February 2024, marking a 40.55% increase compared to the same period in 2023, and has rebounded to 91.08% of the 2019 level. With the continued revival of the aviation industry, it is anticipated that by the second half of 2024, the flight volume in the Sanya FIR will not only fully recover but may even surpass the 2019 record. This growth trend reflects not only the resurgence of regional economic vitality but also underscores the increasing demand for integrated air traffic services.

1.3 Sanya FIR is proactively addressing regional development requirements by enhancing regional cooperation and dedicating efforts to enhance aviation operations in Southeast Asia for safety and efficiency. In alignment with the ICAO Asia-Pacific Seamless ANS Plan, Sanya FIR will collaborate with pertinent States/Administrations throughout 2024 to progress a series of initiatives aimed at fostering the safe and efficient advancement of regional civil aviation.

2. DISCUSSION

In-flight Rerouting

2.1 During flight operations, unforeseen factors such as adverse weather conditions or airspace restrictions often necessitate rerouting to ensure flight safety. Pilots normally need to apply for and obtain air traffic controller approval for in-flight course changes. However, due to insufficient lead time for rerouting requests, waiting for approvals can result in significant airborne delays. In Sanya FIR and adjacent areas, frequent thunderstorms exacerbate the demand for in-flight rerouting, particularly during typhoon seasons and extended periods of systemic weather disruptions affecting air routes.

2.2 To address this issue, it is proposed to establish a standardized regional mechanism for in-flight rerouting along feasible air routes. This mechanism involves pre-negotiating rerouting conditions and procedures with adjacent FIRs on commonly used diversion routes, transitioning from the conventional 'apply before rerouting (ABR)' to 'rerouting before notifying (RBN)' approach. This enables aircraft to initiate rerouting directly without awaiting approval.

2.3 It is suggested that stakeholders identify air routes or segments within their own airspace where 'rerouting before notifying' procedures can be implemented. Clear rerouting routes should be established, and agreements should be reached with neighboring FIRs. For instance, within Sanya FIR, routes such as A1/L642/M771 can adopt the 'rerouting before notifying' approach. If a flight originally scheduled on route A202 needs to divert to route A1, Hanoi ACC can direct the flight to join route A1 at the BUNTA waypoint and notify subsequent waypoints LENKO and IKELA, without requiring approval from Sanya FIR or inquiries about subsequent routes, thus significantly improving rerouting efficiency.

ATS Inter-Facility Data Communication (AIDC)

2.4 On November 1, 2023, the AIDC was officially implemented between Hanoi and Sanya FIR, significantly enhancing operational efficiency, reducing communication workload, and focusing efforts on ensuring safety. In January 2024, for example, the total daily flights on routes A1 and A202 amounted to 556 flights. The application of AIDC between Hanoi and Sanya resulted in significant benefits: daily savings of over 4 hours in telephone communication time, reduction in manual calculations for transfer information, verification of flight details, and decreased likelihood of errors such as miscommunications during telephone handovers. These improvements have substantially increased workload efficiency, effectiveness, and error reduction.

2.5 Since 2024, with the gradual opening of visa-free travel between China and several Southeast Asian countries, there has been a significant increase in flight volume. In February 2024, the combined daily flights on routes L642 and M771 exceeded 300 flights, making telephone handovers between Ho Chi Minh and Sanya ACC a significant part of air traffic control operations. To further promote the application of AIDC, it is recommended to expedite the implementation of AIDC on routes L642/M771 between Ho Chi Minh and Sanya ACC, thereby advancing the comprehensive implementation of AIDC. This will further enhance seamless airspace management in the region, improve air traffic service capabilities, and contribute to achieving the goal of seamless ANS in Asia-Pacific region.

CPDLC

2.6 CPDLC (Controller Pilot Data Link Communications) streamlines the transmission of instructions through data links, reducing reliance on voice communication and consequently decreasing communication workload and the potential for misunderstandings, thereby ensuring the quality and consistency of air traffic services. In 2023, successful CPDLC validation within the Sanya FIR demonstrated the foundational conditions for expanding CPDLC in the area. The benefits of CPDLC

include its capacity to effectively prevent confusion caused by similar callsigns, enhance air traffic service efficiency in specific scenarios, and deliver higher-quality service, all in alignment with the development objectives of Sanya FIR. It's noteworthy that neighboring FIRs like Ho Chi Minh FIR have already implemented CPDLC, providing valuable insights for Sanya.

2.7 Sanya FIR intends to progressively implement CPDLC on routes L642 and M771. This initiative aims not only to boost the operational efficiency of these routes but also to enhance the coordination and safety of air traffic services. With the further advancement of CPDLC services, a clearer and more stable communication environment is anticipated for pilots and airlines, thereby ensuring safer and more seamless flight experiences for passengers.

Contingency Response Cooperation:

2.8 As flight demand recovers and potential events impacting civil aviation safety in the region increase, it’s proposed to strengthen operational-level contingency response mechanisms. While the existing contingency plan (ICAO Doc 9853 Asia/Pacific Air Traffic Management Contingency Plan) offer clear guidance, deeper cooperation among relevant States/Administrations is necessary during ATC operations. Therefore, it’s recommended to enhance regional contingency mechanisms at operational level, including:

- Establishing an information-sharing mechanism: A regional contingency information notification mechanism is proposed to streamline message relay, enabling rapid, widespread, and consistent dissemination of information. This allows all stakeholders to promptly understand the nature, scale, impact, progress, contingency measures, and coordination plans of contingency events.

- Establishing diversion coordination mechanisms: Jointly developing principles and procedures for contingency diversion of both airborne and ground flights is suggested. This includes conditions for diversion, priority and sequence of diversion, diversion routes and altitudes, application and approval of diversion, handover and coordination of diversion, etc., to ensure the orderly, efficient, and safe execution of contingency diversions.

- Standardizing contingency response at FIR boundaries: It’s recommended to establish coordinated contingency avoidance principles between adjacent ATC areas to address various emergency situations and ensure flight safety. This mainly involves two aspects: firstly, suggesting related stakeholders to establish relatively fixed temporary airborne holding areas in their own airspace near the boundary, maintaining a certain distance from the FIR boundary to prevent risks from temporary maneuvers and holding across the boundary. Secondly, recommending related stakeholders to clarify contingency avoidance principles at the boundary and incorporate them into the LOA between ATC units. For example, emergency maneuver directions, aircraft priorities, notification methods, etc., during special circumstances.

Optimization of Route Structure

2.9 Due to the high volume and density of flights in Southeast Asia, air traffic management faces increased pressure and difficulty, impacting flight safety and efficiency. To alleviate congestion and pressure on major routes, and to enhance airspace capacity and efficiency, Sanya FIR, in collaboration with related States/Administrations, is actively promoting the optimization of route structure and traffic flow. Currently, further coordination regarding route alignment, among other aspects, is underway. Recognizing that the adjustment of route structure requires a long period of time, therefore, it’s suggested to maintain lateral offset for aircraft on A1 routes as transitional measures, actively establishing lateral spacing to achieve:

- Relieving route congestion and facilitating flight level changes for aircraft.
- Mitigating risks from misinterpretation of ATC instructions.
- Increasing the operational capacity.
- Addressing contingency events such as aircraft malfunctions, TCAS warning, severe weather, turbulence, etc.

2.10 Lateral offset operations produce similar operational effects to establishing parallel routes to some extent. It is recommended for relevant States/Administrations to adopt relatively standardized and consistent procedures for lateral offset handover. This approach can alleviate congestion and pressure to a certain extent, enhance airspace capacity and efficiency, and prepare for the establishment and implementation of parallel routes.

Reducing Longitudinal Transfer Parameters:

2.11 The longitudinal transfer parameters during aircraft handover between adjacent FIRs directly impact route capacity and efficiency. Reducing transfer separation can, to some extent, increase capacity and efficiency, provide more available flight levels, and reduce flight delays and fuel consumption. Hong Kong, Sanya, Ho Chi Minh, and Singapore FIRs are jointly advancing efforts to reduce the longitudinal transfer separation for L642/M771. A trial operation is preliminarily planned for May 2024, with specific details still under further discussion.

2.12 Sanya FIR will collaborate with related FIRs to reduce the longitudinal transfer separation for L642/M771 from 50 nautical miles to 20 nautical miles. Subsequently, considerations will be made for further reducing transfer separation on denser routes such as A1/A202. This approach can achieve higher airspace capacity and efficiency to a certain extent, contributing to the objectives of a seamless ANS plan in the Asia-Pacific region.

Personnel Exchange and Cooperation

2.13 In the process of promoting regional integration operations, personnel exchange plays a pivotal role in achieving standardized air traffic services. Cooperation mechanisms initiated before 2019, such as the Four ACC cooperation, have proven effective in fostering mutual understanding, enhancing common situational awareness, and providing integrated services.

2.14 With the recovery of flight volumes in 2024, potentially surpassing 2019 levels, it is time to re-launch bilateral/multilateral cooperation projects that were suspended due to reduced traffic volumes. This not only strengthens cooperation among stakeholders in the field of air traffic services but also provides more coordinated air traffic services for the region, thereby enhancing the operational efficiency and safety of the entire aviation network in APAC.

3. CTION BY THE MEETING

a) The meeting is invited to:

b) note the information contained in this paper;

c) jointly promote multilateral cooperation such as in-flight rerouting, contingency response cooperation, reducing transfer separation, A1 parallel routes, and personnel exchanges;

d) consolidate bilateral cooperation and expedite the initiation of bilateral collaborations such as AIDC;

e) discuss any relevant matters as appropriate.

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