International Civil Aviation Organization

The Thirteenth Meeting of the South China Sea Traffic Flow Review Group (SCSTFRG/13)

Beijing China, 16 – 18 July 2025

Agenda Item 2: Review of the Current and Planned CNS/ATM Capabilities and Identifying Associated Reduced Horizontal Separation

POST-TRIAL ASSESSMENT OF 20NM SEPARATION ON ROUTES L642 AND M771

(Presented by CHINA)

SUMMARY

This paper presents the outcome of the trial implementation of 20NM separation on L642/M771. This trial was launched in April 2024. According to the data from January to June 2025, approximately 21 flights per day (7% of the total) have benefited from the reduced 20NM handover separation, significantly enhancing operational efficiency. The data also found that the trial was suspended for 29 days (accounting for 48%) in May-June 2025 due to the implementation of the Large Scale Weather Deviation (LSWD) procedure. Based on the above findings, this paper puts forward conclusion and optimization suggestions, including permanently implementing the 20NM separation under normal operation and optimizing the current LSWD framework. The meeting is invited to consider these suggestions and discuss further refinements for future operational requirements.

1. INTRODUCTION

1.1 Since 2024, with the rapid recovery of flight operations, the number of flights on routes L642 and M771 in 2024 has basically exceeded the level of the same period in 2019 before the pandemic. The current 50NM longitudinal separation between routes L642 and M771 can no longer meet the demand of current civil aviation operations for high-quality cruise altitude layers. Based on the resolution of the previous SCSTFRG meeting on optimizing the airspace capacity in the South China Sea, after the technical safety was verified through preliminary tests, China, Hong Kong China and Vietnam launched the longitudinal separation reduction trial of the L642 and M771 routes in April 2024, aiming to enhance the operational efficiency of these high-density routes.

1.2 This paper analyzes the data during the trial operation period (January to June 2025), assesses the benefits and challenges, and puts forward suggestions for subsequent actions.

2. DISCUSSION

Analysis of the 20NM trial operation data

2.1 According to the data records of the Sanya area Control Center, from January to June 2025, a total of 3,816 flights have benefited, with an average of 21 flights per day (7% of total flights on the two routes). Based on the estimated saving of 25NM (about 3 minutes) per benefiting flight, approximately 11500 minutes (about 192 hours) of flight waiting time were saved within six months,

significantly improving operational efficiency. The data show that a 20NM separation can effectively alleviate congestion and reduce flight delays.

Month	Jan	Feb	Mar	Apr	May	Jun
Total Benefited Flights	718	650	730	778	574	366

Table 1: Statistics of Flights benefiting from the 20NM separation trial of Route L642/M771 from January to June 2025

2.2 Based on the analysis of radar coverage accuracy and aircraft performance, the 20NM separation meets the requirements of ICAO Doc 4444 (PANS-ATM) Standard. Referring to similar routes in the South China Sea region: For instance, the current longitudinal separation of Route A1 is 20 NM, and the average daily flight volume of Route A1 is greater than the total number of flights on Routes L642 and M771.The recent safe operation experience of Route A1 has confirmed that it is technically feasible to implement a 20NM longitudinal separation on Routes L642/M771.

2.3 During the trial operation period, no radar conflicts or safety incidents caused by the reduction of the separation occurred, confirming the safety and feasibility of the 20NM separation under normal meteorological conditions.

Key Challenge: Adverse Weather Impact

2.4 According to Sanya Area Control Center data records, a total of 32 days of 20NM trial operation were implemented on routes L642 and M771 between May and June 2025. On the remaining 29 days, the Large Scale Weather Deviation (LSWD) procedure was initiated due to adverse weather (typhoon, strong thunderstorm, etc.), and the 20NM test was suspended. When reverting to the 50NM longitudinal separation under LSWD procedure (which also halves available flight levels), compared to the normal operation with 20NM separation and full flight levels, it is estimated that capacity is reduced by approximately 75%. Seriously affecting the efficiency of operating aircraft.

Month	Jan	Feb	Mar	Apr	May	Jun
20NM Trial Days	31	27	30	29	14	18

Table 2: Statistics of the actual number of days with a 20NM separation trial implemented on the L642/M771 route from January to June 2025

Conclusion

2.5 The 20NM separation demonstrates significant benefits and has proven safe and reliable under normal operation. It is recommended that the minimum separation standard of 20 NM be permanently implemented on Routes L642 and M771 under normal circumstances. The relevant national/administrative authorities are urged to implement this as an immediate follow-up action.

2.6 When the 20NM longitudinal separation is implemented on the Routes L642 and M771, the existing LSWD procedures are incompatible with the operation of 20NM longitudinal separation. Therefore, in order to address the challenges posed by adverse weather, it is imperative to study and optimize the LSWD procedures to support the current and future operation requirements.

Optimization suggestions

2.7 ***Reducing Longitudinal Separation:*** Reducing the longitudinal separation during LSWD procedure implementation (e.g., using 30NM instead of 50NM) is an effective way to alleviate congestion and mitigate the impact of ATFM measures.

2.8 ***Expanding Available Flight Levels:*** Increasing the number of available flight levels during LSWD procedure implementation (e.g., allowing FL270 and FL280 on L642 and M771) can also alleviate congestion and mitigate the impact of ATFM measures.

2.9 ***Flexible Flight Level Assignments:*** Instead of uniformly halving available flight levels across FIRs (Flight Information Regions), a more dynamic approach should be adopted. For instance, if severe weather affects Ho Chi Minh FIR but not Sanya or Hong Kong FIRs, aircraft transferring to unaffected FIRs should retain access to the full set of flight levels.

2.10 ***Enhancing ATFM Measures:*** Instead of relying on traditional MIT(Miles-in-Trail) restrictions and "check for startup", the region is suggested to adopt the FLOW RATE mechanism, currently being promoted in the Asia-Pacific. FLOW RATE defines the number of aircraft that can be accepted per unit time (e.g., 2 aircraft per 15 minutes, 4 aircraft per 30 minutes). This ensures a structured yet flexible approach to managing traffic during LSWD procedure implementation.

2.11 ***Deviation Recommendations:*** Under current LSWD procedures, pilots independently determine deviation paths. However, operational observations indicate significant variation in routing choices for flights departing from the same city pair, leading to reduced predictability and increased coordination workload. Controllers, equipped with broader weather surveillance capabilities and real-time traffic insights, can provide more efficient deviation recommendations, improving both safety and airspace utilization.

2.12 ***Enhancing Cross-FIR Collaboration:*** Given that LSWD procedure requires simultaneous implementation across multiple FIRs, coordination should be improved to prevent redundant or conflicting ATFM measures. For example, if multiple FIRs impose restrictions due to the same weather system, unnecessary limitations could emerge. Strengthening real-time collaborative decision-making will enhance overall efficiency.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) Explore the permanent implementation of the minimum separation standard of 20 NM on Routes L642 and M771;

c) Evaluate the 30NM separation operation scheme under the LSWD;

d) Encourage relevant States/Administrations authorities to participate in the optimization of LSWD Procedures.

e) discuss any relevant matters as appropriate.

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