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*International Civil Aviation Organization*

**The Fifth Meeting of the South Asia, Indian Ocean and Southeast Asia ATM Coordination Group (SAIOSEACG/5)**

Bangkok, Thailand, 13 – 16 January 2026

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### **Agenda Item 3: Review of Current Operation and Problem Area**

## **ENHANCING CAPACITY ON ATS ROUTES DURING LARGE-SCALE WEATHER DEVIATION (LSWD) PROCEDURES**

(Presented by Singapore)

### **SUMMARY**

This paper invites States/Administrations to share their experience for activation of the Large-Scale Weather Deviation (LSWD) procedures on the six parallel ATS trunk routes that serve air traffic across Southeast Asia and to identify opportunities to optimise capacity during weather events.

## **1. INTRODUCTION**

1.1 The three eastbound parallel routes (L625, M771, and N884) and three westbound routes (L642, M767 and N892) form the six trunk routes that serve air traffic across Southeast Asia. The current flight level allocation scheme (FLAS) for these six routes is FL310, FL320, FL350, FL360, FL390, and FL400. During adverse weather conditions, aircraft may need to deviate from their assigned ATS routes, resulting in high workload for controllers to manage the deviations and the possibility of conflicting with reciprocal traffic on the adjacent route operating at the same level. To mitigate these potential safety risks, Large-Scale Weather Deviation (LSWD) procedures were introduced to maintain safe separation when multiple aircraft deviate laterally from ATS routes due to weather. When activated, the number of usable flight levels on each route is reduced to FL310, FL350 and FL390 for eastbound routes, and FL320, FL360 and FL400 for westbound routes. This ensures the flow of aircraft into the affected airspace is reduced, and the reciprocal aircraft deviating for weather avoidance remain vertically separated.

1.2 Since the establishment of these LSWD procedures, the communication, navigation, and surveillance (CNS) capabilities and operating environment on these routes have advanced significantly. Limitations such as partial surveillance and communication coverage, dependence on procedural separation, lack of Air Traffic Flow Management (ATFM) arrangements and limited meteorological situation awareness, have been largely overcome. Area Control Centres (ACCs) now operate with extensive ADS-B or radar surveillance coverage, more robust inter-ACC coordination mechanisms, established ATFM coordination procedures, and access to high-resolution meteorological products, including real-time forecast products.

## **2. DISCUSSION**

2.1 The Sixteenth Meeting of the South-East Asia ATS Coordination Group (SEACG/16) in 2009 (refer to Appendix A) suggested that LSWD should be activated to mitigate situations of potential loss of lateral separation between ATS routes served by the same flight levels.

2.2 A year before SEACG/16, at the Ninth Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/9) in 2008, a safety assessment was conducted to support the introduction of 50NM lateral and longitudinal separation on L642 and M771. Consequently, an example for the activation of LSWD was provided - in situations where five or more aircraft are expected to deviate more than 10NM in a 30-minute period, and where those deviations cannot be completed within one FIR. The actual activation parameters are subject to bilateral Letters of Agreement (LOA) between adjacent ACCs. For example, Ho Chi Minh and Singapore ACCs utilise this parameter.

2.3 The LSWD procedure for these ATS routes was developed at a time when RNP10 was the predominant navigation specification. Under RNP10, the minimum horizontal separation between compliant aircraft is 50NM apart. Given that each pair of parallel routes is spaced approximately 60NM apart, RNP10 compliant aircraft are permitted to deviate up to 10NM toward an adjacent route to avoid adverse weather. These procedures have not been reviewed since their inception, despite significant advancements in CNS that now support the region's operations.

2.4 In November 2025, Singapore observed LSWD activations on these parallel routes with the following frequency:

- M767/N884: 13 days
- L625/N892: 27 days
- L642/M771: 23 days

2.5 The observed frequency and duration of LSWD activations suggests that these procedures continue to play a significant role in managing weather-related traffic deviations. Understanding the various activation parameters and practices would facilitate better coordination and provide insight into how LSWD procedures are being applied across the region, particularly considering advancements in CNS capabilities. For example, longitudinal spacing has since been reduced to 20NM on routes L642 and M771, and to 30NM between RNP4 equipped aircraft on routes M767 and N884. With enhanced CNS capabilities, consideration should be given to revising the lateral deviation parameters associated with LSWD procedures, either through the application of surveillance separation or by reducing lateral separation criteria from 50NM to 30NM based on RNP4.

2.6 It would be useful for States/Administrations to share their current practices, including (i) criteria used to determine when LSWD activation is warranted; (ii) meteorological or operational conditions that typically trigger activation, and (iii) how coordination with adjacent ACCs is conducted to determine multi-FIR activation. This information could help to identify opportunities to optimise capacity by reducing the frequency and/or duration of LSWD activations without compromising flight safety. For instance, ACCs could still be applying the activation parameters mentioned in para 2.2, which may warrant a review as it was established based on a procedural operating environment. Additionally, in situations where lateral deviations do not pose conflicting risks for reciprocal aircraft on parallel ATS routes, ATFM measures could potentially be considered as an alternative to LSWD procedures. ATFM measures may be more optimal than imposing level restrictions as they could help manage controllers' workload without reducing available flight levels in a surveillance operating environment.

2.7 Looking ahead, the transition from the current FLAS to the ICAO Standard Flight Orientation Scheme (FLOS), could fundamentally address the safety challenges posed by LSWD situations. Under FLOS, eastbound traffic would operate on odd flight levels whilst westbound traffic would operate on even flight levels, eliminating the need for level restrictions during weather deviations. Given that the review of FLAS/FLOS is priority area for SCSTFRG, it is an appropriate time for States/Administrations to consider focusing resources and effort for the review.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) share LSWD activation parameters and procedures;
- b) identify opportunities to optimise capacity during weather events;
- c) consider establishing a small working group under the ambit of SCSTFRG to study the feasibility of FLAS/FLOS implementation for the six parallel trunk routes and to develop an implementation plan for the FLAS/FLOS transition; and
- d) discuss any relevant matters as appropriate.

SEACG/16  
Appendix A to the Report

**Flight Level Allocation Scheme (FLAS) for Large Scale Weather Deviations (LSWD) in Western Pacific/South China Sea area**

as applicable by

Fukuoka ATMC, Ho Chi Minh, Hong Kong, Kota Kinabalu, Manila, Naha, Sanya, Singapore and Taipei ACCs

Flight Level Allocation (LSWD)	ATS Route and Direction of Flight										
	N892	L625	N884 (South of LBG)	N884 (North of CAB)	M767	A582/B462		A590		L642	M771
	SW	NE	NE	NE	SW	E	W	E	W	SW	NE
410				410							
400	400				400				400	400	
390		390	390			390		390			390
380							380				
370				370							
360	360				360				360	360	
350		350	350			350		350			350
340							340				
330				330							
320	320				320				320	320	
310		310	310			310		310			310
300							300				
290				290							

**Activation conditions:**

- 1) The LSWD procedures will be activated to mitigate effects of widespread adverse weather. Coordination will be conducted in accordance with Operational Letters of Agreement (LOA) between the affected ACCs with the objective of implementing LSWD procedures simultaneously by all ACCs.
- 2) Activation of LSWD procedures is intended to mitigate situations of potential loss of lateral separation between ATS routes served by the same No-PDC flight levels. For example, this could include situations where 5 or more deviations of more than 10 NM are experienced/anticipated in a 30 minute period and those deviations can not be completed within one FIR.
- 3) In circumstances where deviations are wholly contained within one FIR, or suitable coordination can be completed between two adjacent FIRs, activation of LSWD procedures may not be necessary.