

**60th CONFERENCE OF
DIRECTORS GENERAL OF CIVIL AVIATION
ASIA AND PACIFIC REGIONS**

*Sendai, Japan
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AGENDA ITEM 3: AVIATION SAFETY

**LESSONS LEARNED FROM THE AIRPORT'S MANAGEMENT
OF A SEVERE TURBULENCE INCIDENT**

(Presented by Thailand, co-sponsored by Singapore)

INFORMATION PAPER

SUMMARY

This paper highlights the importance of effective emergency response and inter-agency coordination on the ground, including drawing on learnings from the incident involving a Singapore aircraft that encountered severe turbulence and was diverted to Bangkok, resulting in one fatality and multiple injuries. The discussion underscores the importance of robust Emergency Response Plans (ERP) and preparedness, notably the swift actions by Airports of Thailand (AOT) and serves as a timely reminder for States/Administrations to remain vigilant regarding turbulence-related risks. Action by the Conference is in paragraph 4.1.

LESSONS LEARNED FROM THE AIRPORT'S MANAGEMENT OF A SEVERE TURBULENCE INCIDENT

1. INTRODUCTION

1.1 Turbulence encounters continue to pose significant safety risks to civil aviation, even with modern forecasting and avoidance technologies. In particular, during the Asia/Pacific monsoon season, convective weather patterns can increase the likelihood of sudden severe turbulence. In line with Action Item 59/7 (1a), which encourages the sharing of experiences and best practices related to turbulence encounters, this paper presents lessons learned from the management of a severe turbulence incident.

1.2 In May 2024, a Singapore Airlines Boeing 777-300ER flight experienced severe turbulence encounter whilst operating a commercial flight from London to Singapore. Preliminary investigation findings indicated that the aircraft most likely encountered an updraft leading to sudden and significant G-forces while likely flying through an area of developing convective activity. The flight crew immediately declared an emergency and diverted the flight to Bangkok Suvarnabhumi Airport to seek urgent medical assistance for the injured.

2. DISCUSSION

2.1 Once the emergency was declared, Airports of Thailand (AOT) activated their ERP without delay. Emergency medical teams were positioned at Bangkok Suvarnabhumi Airport and stood ready to assist upon the aircraft's arrival. One contributing factor to the timely response was the availability of medical personnel stationed on-site at the airport. AOT maintains medical units at its airports to provide immediate assistance in case of emergencies, supporting the overall coordination and initial medical care. Despite challenging weather conditions, the airport's response teams acted promptly to manage the situation and facilitate the transfer of injured passengers to nearby hospitals. This coordinated effort highlights the value of preparedness, defined roles, and close collaboration between airport authorities, the airline's operations center, air traffic control, and local emergency services.

2.2 The incident underlined the critical importance of having robust and practiced ERPs for both airlines and airports. Suvarnabhumi Airport executed their respective emergency plan – regularly drilled and coordinated with stakeholders – and which proved effective when urgently activated. Key elements that contributed to success included clear communication channels (between the flight crew, ATC, and airport emergency services), pre-designated roles for crisis coordination, and availability of medical supplies and ambulances on stand-by. States/Administrations should ensure that airports under their oversight have similar arrangements and that airlines operating in their airspace coordinate on emergency preparedness. Sharing such ERP frameworks and success stories among States can help improve regional readiness for handling emergencies.

2.3 This event occurred near the onset of the Southeast Asian monsoon season, when severe weather and convective turbulence are more prevalent. It serves as a sober reminder that even well-planned flights can encounter unforeseen turbulence in such periods. States and operators are reminded to remain especially vigilant during monsoon months. This includes ensuring that flight crew receive up-to-date weather information and advisories, and that they exercise caution when deviating around storms or areas prone to turbulence. It also means that ground facilities in regions affected by monsoons are prepared for potential diversions or emergency landings. Emphasis should be placed on promoting the continuous use of seat belts by passengers when seated, as a general safety practice, though it is understood that in this incident many injuries occurred while the seat belt sign was off during service. Above all, this experience underlines that preparedness and rapid response are lifesaving, and that no region is immune to such event by sharing information about turbulence incidents (including meteorological context and response outcomes), States/Administrations can collectively improve forecasting techniques, awareness of turbulence hotspots, and overall preparedness.

2.4 Timely communication with en route ATC is crucial for managing turbulence encounters. In this incident, the flight crew promptly reported the turbulence encounter to ATC. Providing ATC with clear information on the location, altitude and severity of turbulence encounters enabled ATC to alert nearby aircraft to be vigilant of potential risks. This practice should be extended to all turbulence encounters, not just severe events. By sharing turbulence information with ATC, flight crews help improve situational awareness for all aircraft in the vicinity, contributing to overall flight safety and enabling proactive risk management. In light of recent turbulence incidents, it is also encouraged that organizations which manage and distribute weather-related data, consider extending their services and sharing valuable meteorological information with all aviation stakeholders. By prioritizing safety and collaboration, all parties can contribute to a more robust safety ecosystem where information is accessible to those who need it the most. This approach can help ensure that essential weather insights are available to operators and airports, ultimately safeguarding the safety of all passengers and crews.

2.5 States/Administrations are also urged to share more information about turbulence incidents (including meteorological context and response outcomes) to collectively improve forecasting techniques, awareness of turbulence hotspots, and overall preparedness. In this region, Indonesia, Malaysia, the Philippines, Singapore and Thailand have established a regional data sharing initiative to safety data and safety information from occurrence reports collected by States through their respective mandatory occurrence reporting systems. Severe turbulence encounter is one of the identified occurrence types that is being shared. Outcomes and insights generated from the analysis would be further shared at regional forums to promote the exchange of safety information and insights to enhance safety.

2.6 The turbulence encounter described in this paper illustrates the unpredictable nature of turbulence and the importance of effective response strategies. While modern weather prediction tools help mitigate some risks, turbulence remains an ever present threat. This incident reinforces the importance of preparedness, timely response, and efficient communication among the stakeholders involved. By sharing experiences and best practices, service providers can enhance their responses and be better equipped to handle similar events in the future. The monsoon season, in particular, requires heightened vigilance and readiness.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to:

- a) note the lessons learned and experiences shared in this paper;
- b) encourage States/Administrations and industry partners to share information, insights, best practices and experiences related to turbulence encounters;
- c) urge States/Administrations to ensure robust ERPs and inter-agency coordination mechanisms are in place to handle turbulence-related emergencies effectively;
- d) encourage flight crews to continue reporting turbulence encounters to ATC, enabling real-time sharing of information to improve safety for all aircraft in the vicinity; and
- e) encourage States/Administrations in the Asia-Pacific region to explore opportunities for collaboration and participation in this regional data sharing initiative, recognising the collective impact it can have on enhancing aviation safety and contributing to the region's safety efforts.

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