



ICAO

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Ninth Meeting of the Aerodromes Operations and
Planning Sub-Group (AOP/SG/9)

Bangkok, Thailand, 30 June to 4 July 2025

Agenda Item 5: State's/Aerodrome Operator's update and best practices on:

- Runway Safety Programme including the establishment of Runway Safety Team**

**SINGAPORE'S COLLABORATIVE APPROACH TO ENHANCING RUNWAY SAFETY
THROUGH THE CHANGI AIRPORT RUNWAY SAFETY TEAM (CRST)**

(Presented by Singapore)

SUMMARY

This paper highlights the importance of runway safety through collaboration and knowledge-sharing among stakeholders through the establishment of Runway Safety Teams (RSTs). The Changi Airport RST (CRST) exemplifies this coordinated approach to mitigate risk and enhancing operational safety. By incorporating global best practices such as the Global Action Plan for the Prevention of Runway Incursions (GAPPRI), CRST reinforces the value of collective learning as a strategic framework for improving runway operations at Singapore Changi Airport.

1. INTRODUCTION

1.1 The ICAO Runway Safety Programme (RSP) emphasizes the importance of establishing Runway Safety Teams (RSTs) at airports as a collaborative and effective strategy to reduce runway-related accidents and serious incidents. Introduced as a key outcome of the ICAO Global Runway Safety Symposium held in Montreal, Canada, in May 2011, RSTs have demonstrated notable success in mitigating risks such as runway incursions and excursions.

1.2 Singapore's Changi Airport RST (CRST) demonstrates how multi-stakeholder collaboration enhances runway safety. Through regular reviews, proactive risk identification, and mitigation strategies, CRST ensures continuous improvements in safety management.

1.3 While the implementation of RSTs has been effective, challenges remain. ICAO encourages Member States to share their best practices and challenges to facilitate global learning and the collective advancement of runway safety programmes.

2. DISCUSSION

Challenges in Implementing Runway Safety Measures

2.1 States continue to face operational and technical challenges in maintaining high runway safety standards. Some of the key challenges include the following:

- Runway Incursions & Excursions
- Foreign Object Debris (FOD) Management
- Wildlife Hazards
- Runway Confusion
- Stakeholder Coordination
- Integration of Advanced Technologies

2.2 To address these challenges, a holistic and coordinated approach among stakeholders is essential. Collaboration allows State to strengthen risk mitigation strategies by providing a platform for sharing best practices, exchanging lessons learned, and integrating global safety initiatives. Through enhanced stakeholder engagement, decision-making processes across multiple entities can be better streamlined, ensuring a more proactive response to safety concerns.

2.3 One proven method for strengthening runway safety management is the establishment of RSTs, a structured, multi-stakeholder initiative designed to proactively monitor and resolve safety concerns at airports. By bringing together key stakeholders, including airport operators, air navigation service providers, airlines, and regulatory authorities, RSTs enhance situational awareness, streamline communication, and promote the timely resolution of safety issues, ultimately contributing to safer and more efficient airfield operations.

Singapore's Changi Airport RST (CRST)

2.4 Established in 2010, Singapore's CRST regularly review its Terms of Reference (ToR) to align with evolving safety challenges, operational practices, and regulatory frameworks. The CRST undertakes the following core functions:

- Recommend strategies for hazard removal and mitigation of associated residual risks by considering potential runway safety issues. These strategies may be developed based on local occurrences or best practices or combined with information collected elsewhere.
- Identify, review and monitor relevant runway safety indicators to determine the effectiveness of the control measures.
- Be a platform for open communication and discussion to make inter-organisation decisions arising from runway-related safety data and performance and introduction of changes to operational procedures.

2.5 The CRST convenes once every two months, to promptly identify and mitigate potential runway safety issues. Members include representatives from the airport operator (Changi Airport Group (CAG)), the air navigation service provider (Civil Aviation Authority of Singapore (CAAS)), airlines, and other stakeholders, such as pilots' associations and military agencies. Subject matter experts such as meteorologists, ornithologists, accident investigation authorities and aeronautical information service providers would share information, exchange ideas, discuss issues and take actions when necessary, as an aviation community. This ensures joint decision-making and effective management of runway-related risks.

2.6 In ensuring effective decision-making, CRST operates under clearly defined roles for every stakeholder, with the terms of reference outlined as follows:

- Monitor runway incidents by type, severity, and frequency of occurrence
- Identify, review and track runway related safety indicators to determine the effectiveness of the control measures
- Conduct of inter-organisational consultation, decision making and conflict resolution processes
- Develop and implement a Runway Safety Action Plan
- Review the effectiveness of the Runway Safety Action Plan annually
- Review the Runway Safety Team Set-Up Checklist annually

Addressing Challenges Through Changi Runway Safety Action Plan (CRSAP)

2.7 The CRST has developed a CRSAP, which is a dynamic document CRST uses to proactively tackle runway safety challenges. It provides a structured framework to ensure effective hazard identification, risk mitigation, and accountability. The framework involves:

- Identifying priority areas through hazard identification, data analysis, and risk assessment.
- Developing strategies to address the identified priority areas and implementing initiatives to mitigate identified risks.
- Designating lead roles to stakeholders within the RST for initiative execution to ensure accountability and progress.

2.8 The CRSAP contains five key runway priority areas that were identified through CAG's Safety Management System (SMS) which are Runway Incursion, Runway Excursion, Foreign Object Debris (FOD), Wildlife Hazards, and Runway Confusion.

Integration of Global Action Plan in Singapore's Runway Safety Initiatives

2.9 CAAS and CAG actively contributed to the development of Global Action Plan for the Prevention of Runway Incursions (GAPPRI), a comprehensive roadmap to mitigate runway incursion risks. This action plan provides a roadmap for mitigating runway incursion risks through immediate, near-term, and long-term actions by emphasizing a multi-layered approach, incorporating human factors, advanced technologies, and collaborative efforts among stakeholders.

2.10 To align with GAPPRI's global framework, the CRST established a sub-working group to review and assess key recommendations for integration into the CRSAP. These recommendations are being evaluated holistically to ensure their scalability and operational suitability within Changi Aerodrome's safety framework. By incorporating GAPPRI principles within CRSAP, Singapore has enhanced its ability to systematically reduce runway incursion risks, contributing to safer and more efficient airfield operations.

Continuous Improvements

2.11 In ensuring a continuous enhancement of safety measures and operational process, CRST employs tools like the RST Set-Up Checklist to evaluate the programme for potential gaps and identify areas for improvement. Regular reviews and updates to the CRSAP also ensure its relevance and effectiveness in addressing emerging runway safety challenges.

Safety Awareness Campaign

2.12 CRST has undertaken significant safety promotion activities to enhance runway safety awareness among all stakeholders. It has been actively engaging airlines, the airside community and Air Traffic Controllers (ATCOs) through targeted initiatives to address specific safety concerns. These efforts include disseminating runway safety awareness materials, such as guidance documents, visual tools and safety awareness cards, to ensure stakeholders are equipped with the necessary knowledge to mitigate risks effectively.

2.13 CRST also actively engages with stakeholders through brown bag discussion sessions, promoting open dialogue and knowledge-sharing. Through these concerted efforts, CRST continues to demonstrate its commitment to fostering a proactive safety culture and driving continuous improvements in aviation safety standards.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) discuss any relevant matters as appropriate; and
- c) encourage member States to collaborate by sharing and exchanging their best practices and challenges encountered in their Runway Safety Programme.

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