澳門特別行政區
REGIÃO ADMINISTRATIVA ESPECIAL DE MACAU
民 航 局
AUTORIDADE DE AVIAÇÃO CIVIL
CIVIL AVIATION AUTHORITY

SAFETY NOTICE

SUBJECT: **Runway Incursion Prevention and Pilot Training**

GENERAL: Safety Notices (SNs) are issued by the Civil Aviation Authority – Macao, China to convey advisory information to Macao aviation entities to enhance safety. SNs contain safety-related recommendations, guidance and/or industrial best practices to specific subjects which may or may not have been addressed by established requirements and regulations.

RELATED REGULATIONS: AC/OPS/025 – Training and Testing Requirements for Flight Crew Member and Flight Operations Officer
AC/OPS/002 – Operations Manual Requirements

APPLICABILITY: This SN applies to operators of Macao registered aircraft.

CANCELLATION: This SN is the first SN issued on this subject.

REFERENCES: The following material was referred to for the development of this SN:

> ➢ ICAO Regional Aviation Safety Group – Asia and Pacific Regions (RASG-APAC) endorsed safety tools – Runway Incursion Prevention and Pilot Training

1.   Introduction

1.1   This Safety Notice is issued to bring to the attention of air operators the importance of pilot training to reduce the incidence and/or severity of runway incursions. The SN includes information on existing guidance and training material which can be used in the development and implementation of Standard Operating Procedures (SOP) and runway incursion training programmes for pilots. This safety enhancement reduces the risk of Runway Incursions (RI) by the incorporation of RI training and SOP into flight crew qualification, training, and other pilot training programmes. This training will increase the pilot's ability to recognize and avoid situations leading to runway incursions.

2.   Background

2.1   The ICAO Regional Aviation Safety Group – Asia and Pacific Regions (RASG-APAC) endorsed a safety tool which focused on the development and implementation of SOP and provision of runway incursion training for pilots with a goal of reducing the incidence of runway incursion occurrences and accidents.

2.2 There are a range of factors contributing to pilot attributed runway incursions which can either directly, or in combination with other factors lead to the occurrence. The most common factors are:

(1) Aerodrome complexity and variations from standard;

(2) Inappropriate, unreadable or lack of airfield signs, markings or lights;

(3) Communications, including:

(a) Ambiguous and/or misunderstood transmissions; and

(b) Traffic and radio congestion.

(4) Human factors, including:

(a) Physiological factors (e.g. fatigue);

(b) Distraction; and

(c) Complacency.

(5) Environmental factors, including:

(a) Weather; and

(b) Visibility.

(6) Pre-flight planning of ground movements;

(7) Pilot application of correct rules and procedures;

(8) Pilot training, knowledge and experience; relating to:

(a) Aerodrome markings, signs and lights, and;

(b) Procedures relating to operation on and around runways.

2.3 Very few runway incursions occur as a result of a single factor, with the majority resulting from a combination of factors.

3. *Pilot Training*

3.1 Significantly reduced incidence of runway incursions and an overall improvement in aviation safety can be benefited from the development and implementation of effective SOP and pilot training.

3.2 Air operators should enhance aviation safety by:

(1) ensuring that runway safety is included in initial and recurrent training for pilots;

(2)   ensuring that effective SOP are developed and implemented for training of pilots against runway incursion; and

(3)   ensure that pilots use SOP to reduce the risk of runway incursion.

3.3   As a minimum, pilot training should include:

(1)   Communication / RT Procedure and phraseology;

(2)   Rules and SOP for taxi;

(3)   Rules and SOP for crossing, entering or operating on any runway;

(4)   The use of a sterile cockpit;

(5)   Procedure to ensure the pilot looks outside of the cockpit;

(6)   Aerodrome markings, signage and lights; and

(7)   Location-specific training, for identified RI threats at aerodromes used by the operator.

4.   *Guidance Material*

4.1   The global aviation industry has developed a range of guidance material which can be used either as stand-alone training for pilots, or in the development of RI training and SOP. These resources are available through the ICAO Runway Safety iKit available at http://cfapp.icao.int/tools/RSP_ikit/story.html.

4.2   Appendix 1 to this SN contains a summary of some material available to assist air operators to develop or implement Runway Incursion training and SOP for pilots.

5.   *Recommended Actions*

5.1   Air operators are encouraged to note the information contained in this Safety Notice and review their policies, procedures and training to reflect the safety issues contained in this SN.

- End –

APPENDIX 1

Runway Incursion Training and Guidance Material

ICAO Runway Safety Toolkit

(http://cfapp.icao.int/tools/RSP_ikit/story.html)
The ICAO Runway Safety Toolkit provides a range of information and training products relating to runway safety. Although the products listed below, contain specific material relating to the prevention of runway incursions for pilots, States, Air Navigation Service Provider (ANSP), aerodrome and aircraft operators should consider the use of toolkit when addressing other areas of runway safety, such as runway excursions, airside driving, unstabilised approaches, aerodrome maintenance and communications.

ICAO Manual on the Prevention of Runway Incursions (Doc 9870)

This manual provides runway incursion contributory factors, best practices and recommendations for prevention, as well as guidance for the implementation of national or local runway safety programmes.

Airports Council International (ACI) Runway Safety Handbook

Although designed for use by aerodrome operators and airside drivers, this booklet includes information regarding aerodrome signage, markings and procedures which are equally as relevant to pilots.

International Federation of Airline Pilots' Associations (IFALPA) Runway Safety Manual

This manual provides information to pilots on aerodrome layout, SOP development and guidance to avoid a runway incursion.

International Council of Aircraft Owner and Pilots Association (IAOPA) Air Safety Institute Runway Safety Online Course

This course takes an in-depth look at safe airport operations, with special emphasis on tricky situations from the real world of cockpit distractions, confusing taxiways, and miscommunication.

Note. To access this course, users will be required to create a user account with AOPA.

International Council of Aircraft Owner and Pilots Association (IAOPA) Air Safety Institute Runway Safety Flash Cards

These cards contain images and information regarding aerodrome signs and markings. They are suitable for both learning and for testing knowledge of the most common aerodrome signage and markings.

Federal Aviation Administration (FAA) Runway Safety

The FAA Runway Safety page provides a range of information for use by pilots, aircraft operators, training organizations and States relating to the procedures, signage markings and lights and other aerodrome information which could be included in pilot runway incursion training and SOP development. Additionally, the website includes already developed instructional information, tips and information to avoid runway incursions. Examples include:

- New Runway Safety Section for Pilots Handbook of Aeronautical Knowledge

  This appendix to the Pilots Handbook of Aeronautical Knowledge provides pilots with an overview of runway incursions and guidance information and best practices relating to taxi planning and procedures, communications and airport signs markings and lighting.

- FAA Taxi Test

  This 60-minute video provides a comprehensive look at runway safety best practices including a review of signs and markings; scenario-based do's and don'ts; and clear explanations of why certain procedures are critical.

European Action Plan for the Prevention of Runway Incursions

This document contains a range of recommended actions and guidance for aircraft operators, aerodromes, ANSPs and regulators to reduce runway incursions. Sections also exist on specific topics such as pilot/ATC communications and flight crew best practice to avoid runway incursions.

Airservices Australia Pilots Guide to Runway Safety

(https://www.airservicesaustralia.com/wp-content/uploads/16-139BKT_Pilots-guide-runway-safety_WEB.pdf)
This booklet combines a range of information on aerodrome signage, markings and lights with guidance and tips to pilots regarding safely operating on or around runways.

Australian Tips to Avoid a Runway Incursion (leaflet)

(http://www.airservicesaustralia.com/wp-content/uploads/Tips-to-avoid-runway-incursion.pdf)
This leaflet was developed by the Australian Runway Safety Group from the most common errors made by pilots leading to a runway incursion. It provides graphical information on common aerodrome signs and markings and tips to pilots to avoid a runway incursion.

Federal Aviation Administration (FAA) Academy Runway Incursion Prevention
This classroom training aims to reduce or eliminate runway incursions by increasing awareness of causal factors. The course covers information on runway safety programs, common RI scenarios and factors, communications, visual aids, best practices for taxi operations and SOP development. The course is available through the ICAO TRAINAIR program (http://www.icao.int/training/Pages/default.aspx).