

**OTAC 91-4**

**119-7**

**121-5**

**125-5**

**135-5**

**139-11**

**172-6**

## **Prevention of Runway Incursions**

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### **GENERAL**

Overseas Territories Aviation Circulars are issued to provide advice, guidance and information on standards, practices and procedures necessary to support Overseas Territory Aviation Requirements. They are not in themselves law but may amplify a provision of the Air Navigation (Overseas Territories) Order or provide practical guidance on meeting a requirement contained in the Overseas Territories Aviation Requirements.

### **PURPOSE**

The International Civil Aviation Organisation has identified runway incursions as a major threat to flight safety. This Circular contains guidance on prevention of runway incursions.

### **RELATED REQUIREMENTS**

This Circular relates to OTAR Parts OTAR Parts 91, 119, 121, 125, 135, 139 and 172.

### **CHANGE INFORMATION**

First Issue

### **ENQUIRIES**

Enquiries regarding the content of this Circular should be addressed to Air Safety Support International at the address on the ASSI website [www.airsafety.aero](http://www.airsafety.aero) or to the appropriate Overseas Territory Aviation Authority.

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## 1 Introduction

- 1.1 Research by ICAO and others has determined that runway incursions have been a significant factor in a number of accidents. The worst aviation accident ever occurred as a result of an incursion, and involved 2 Boeing 747 aircraft at Tenerife Los Rodeos aerodrome in fog. Accidents with fatal consequences have also occurred at numerous other airports, including Milan Linate.
- 1.2 Prevention of runway incursion events has been accorded a high priority by ICAO as a means of enhancing flight safety and preventing accidents. Runway incursion prevention will involve many agencies – aerodrome operators, aircraft operators and air traffic service providers amongst others. Prevention programmes will require co-ordinated action between the various agencies involved.
- 1.3 For aerodromes, a runway incursion prevention programme will form one part of a comprehensive runway safety programme.
- 1.4 This Circular provides some guidance on runway incursion prevention to agencies in the Territories.

## 2 Definition

- 2.1 ICAO defines a runway incursion as:

*“Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft.”*

- 2.2 This is not a precise definition, but a useful and concise means of determining whether an incursion has occurred is to consider whether the obstacle limitation surfaces associated with the runway are penetrated by the intruder. Essentially an intruding object would constitute an obstacle to aircraft taking off or landing, even if an aircraft is not doing so at the time of incursion.
- 2.3 Note that the ICAO definition does not include wildlife. Guidance on wildlife management can be found in [OTAC 139-6](#).

## 3 General

- 3.1 Runway incursions have been identified as a critical flight safety hazard by a number of States, and have been a factor in a number of aircraft accidents. With the historical and predicted growth in air traffic and the consequential rise in aircraft movements, the incidence of runway incursion has increased, and is set to do so in future unless preventative measures are taken.
- 3.2 A number of States have implemented prevention plans, an example of which is the European Action Plan for Prevention of Runway Incursions:

[www.eurocontrol.int/runwaysafety/gallery/content/public/docs/EAPPRI%201\\_2.pdf](http://www.eurocontrol.int/runwaysafety/gallery/content/public/docs/EAPPRI%201_2.pdf)

*Note: this is a large download (4.7Mb)*

- 3.3 Other guidance material, including the ICAO Manual for Prevention of Runway Incursions, posters and a very instructive CD-ROM are also available, free of charge, at:

[bluskyservices.brinkster.net/rsa/](http://bluskyservices.brinkster.net/rsa/)

## **4 Where and when do runway incursions happen?**

- 4.1 Runway incursions can occur at any aerodrome at any time and involve any type of aircraft, vehicle or person.
- 4.2 In good weather pilots or Air Traffic Service staff are often able to detect intruding traffic visually and initiate appropriate avoidance action. Catastrophic results are usually avoided, but the potential is certainly there.
- 4.3 In poor weather the probability of successful detection and timely avoidance is lower. The risk of catastrophic outcome is therefore higher for each event. The collisions at Tenerife Los Rodeos and Milan Linate both occurred in fog, which gave no opportunity for the pilots concerned to take avoiding action.

## **5 Why do runway incursions happen?**

- 5.1 There are many reasons why runway incursions occur, and a reading of accident reports where runway incursion was a factor will highlight many of these. The report of the Milan Linate accident is particularly instructive:

<http://www.ansv.it/cgi-bin/eng/FINAL%20REPORT%20A-1-04.pdf>

- 5.2 Runway incursions occur because of inevitable human failings which human factors engineering have not anticipated or adequately mitigated. These failings can take many forms:
- 5.2.1 lack of comprehension of instructions such as clearances due to poor communications quality or cultural differences;
  - 5.2.2 confusion caused by lack of clarity in instructions, markings, signage, lighting and publications;
  - 5.2.3 susceptibility to suggestion caused by cultural or commercial factors;
  - 5.2.4 loss of situational awareness; and
  - 5.2.5 distractions and excessive workload.

## 6 Countering runway incursions

- 6.1 Firstly, study available reference material for ideas on addressing the problems. The hyperlinks in this Circular are a good place to start, and there are other materials provided by larger aviation regulators here:
- 6.1.1 FAA: [http://www.faa.gov/airports/airport\\_safety/call\\_to\\_action/](http://www.faa.gov/airports/airport_safety/call_to_action/)
- 6.1.2 UK CAA: <http://www.caa.co.uk/default.aspx?catid=17&pagetype=90&pageid=2370>
- 6.2 Ensure that runway incursions are accorded a high priority in the aerodrome operator's safety management system. The incidence of runway incursions should be monitored for a trial period to determine the scale of the problem. Any runway incursion incidents must be investigated to determine causal factors. Any causal factor trends will need to be addressed, and this is best done through the safety management system.
- 6.3 All runway incursion incidents must be reported through the Mandatory Occurrence Reporting System (MORS). Such reports contribute to global statistics and research into runway incursions, which in turn leads to the internationally co-ordinated development of countermeasures.
- 6.4 Establish an appropriate Runway Safety Programme to reduce runway incursions. Ensure that the action plan addresses all agencies operating at the aerodrome, and that the Runway Safety Programme is managed by a multi-disciplinary Runway Safety Team. The Runway Safety Team may be a standalone committee or part of an existing aerodrome safety committee.
- 6.5 Ensure that an aerodrome-wide runway safety awareness campaign is undertaken.
- 6.6 Ensure that internal safety audit teams are tasked specifically to ensure that aerodrome facilities comply with ICAO SARPS and OTARs.

## 7 Recommendations for each organisation

### 7.1 Aerodrome operators

- 7.1.1 Ensure that all markings, signs and lights are compliant with standards, serviceable, and effective in all conditions. Ensure that the airport maintenance programme is effective in maintaining serviceability.
- 7.1.2 Ensure that all airport users are trained in airside movement and are familiar with airside procedures, and that personnel driving vehicles airside are licensed and competent to do so, including in the use of radios. Ensure that the Aerodrome Manual, local regulations and procedures, training and guidance materials are kept up to date and are promulgated properly.
- 7.1.3 During work in progress or other temporary changes, ensure that all aerodrome users are familiar with the changes and their effect on airside operations. Ensure any changes to airside procedures are properly notified and promulgated.

- 7.1.4 Undertake the necessary risk analyses for changes to airside aerodrome infrastructure or procedures. Ensure that perimeter fencing is adequate and frequently inspected to prevent incursion by wildlife or persons.

## **7.2 Air Traffic Service providers**

- 7.2.1 Ensure proper use of correct radio telephony procedures. Ensure correct language and phraseology is used. Do not tolerate non-standard radio telephony usage by aerodrome users. In particular, use full callsigns to avoid confusion.
- 7.2.2 Ensure that clearances issued to aircraft and vehicles are unambiguous and read back correctly, particularly when giving clearance to enter the runway. Where there is any suspicion of miscomprehension, repeat the clearance.
- 7.2.3 Ensure clearances are passed to pilots at periods of low workload, preferably whilst aircraft is stationary, and not prior to runway crossing. Avoid the use of conditional clearances (e.g. “after the landing aircraft line up runway 26”).

## **7.3 Aircraft Operators**

- 7.3.1 Ensure pilots are knowledgeable about aerodrome markings, signs and lights, particularly if the aerodrome is large, complex, busy or subject to temporary work.
- 7.3.2 Ensure pilots adhere strictly to correct radio telephony procedures, in particular the use of full callsigns to avoid confusion in busy radio environments.
- 7.3.3 Promote effective sterile flight deck procedures whilst the aircraft is in motion, to ensure minimal distraction of pilots.
- 7.3.4 Ensure proper use of cockpit resource management during ground movement to ensure that at least one pilot is dedicated to ground manoeuvring.
- 7.3.5 Ensure that pilots understand clearances and read them back explicitly.
- 7.3.6 Ensure pilots receive timely information on changes to aerodrome facilities, if necessary by ATIS or ATC broadcast.