

**THE HASHEMITE KINGDOM OF JORDAN
CIVIL AVIATION REGULATORY COMMISSION**



Guidance Material

Runway Incursion Prevention Programme

Issued On the Authority of the Chief Commissioner/CEO of the Civil Aviation Regulatory
Commission



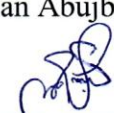



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DOCUMENT APPROVAL

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AMENDMENTS

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1. Purpose

- 1.1 The purpose of this Publication is to promulgate supplementary guidance material to aerodrome operators on runway incursion prevention programme, equipment and procedures including integration of markings, lights and signs as a whole into the runway incursion prevention plan, taking into account different traffic intensities and visibility conditions at the aerodromes. This Publication provides guidance on what is acceptable to by CARC(DASS).
- 1.2 This Publication recommends and explains parts of a runway incursion prevention programme, in particular; visual aids, use of technology and airside driving. By considering the suggested parts, the aerodrome operator should be able to establish a runway incursion prevention programme for its aerodrome if they have not established one.

2. Applicability

- 2.1 This Publication applies to all aerodrome
Aerodrome operators should examine each item carefully, by considering the size, complexity and scope of operations at the aerodrome to determine what applies.

3. Introduction

- 3.1 Runway incursion is defined 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.”
- 3.2 Runway safety is vital to the safety of aircraft operations at an aerodrome. While runway safety encompasses many areas which include issues such as foreign object debris and wildlife straying onto the runway and other logistical deficiencies, it is critical that increasing emphasis has to be placed on runway incursion prevention as air traffic volume increases.
- 3.3 Studies have shown that that runway incursions increase exponentially with respect to an increase in air traffic volume and runway incursions have sometimes resulted in serious accidents with significant loss of life. An example of a serious accident would be the one which occurred on 8 October 2001, at Linate airport in Milan, Italy, where all 114 people onboard the two aircraft were killed.
- 3.4 One of the many contributory factors to a runway incursion is airside vehicle drivers. The most common driver-related factors identified in several studies are:
- a) Failure to obtain clearance to enter the runway;
 - b) Failure to comply with ATC instructions;

- c) Inaccurate reporting of position to ATC;
- d) Communication errors;
- e) Inadequate training of airside drivers;
- f) Absence of radiotelephony equipment;
- g) Absence of radiotelephony training;
- h) Lack of familiarization with the aerodrome;
- i) Lack of knowledge of aerodrome markings, lights and signs; and
- j) Lack of aerodrome maps for reference in airside vehicles.

3.5 A runway incursion prevention programme should aim to remove hazards and minimize the residual risk of runway incursions and to reduce active failures and the severity of their consequences.

4. Objective

4.1 The objective of a runway incursion control programme is for the aerodrome operators to put in place a plan to assess runway incursion, the impact of runway incursion and reduce the number of runway incursions at their aerodromes. The following are recommended elements for such programme:

- a) Establishment and continual operation of a runway safety team/ group in accordance with its terms of reference;
- b) Data collection and data analysis through reporting by relevant parties/ personnel, investigations, etc;
- c) Ensuring aerodrome visual aids such as markings, lights, signs and airside related procedures relating to runway operation in compliance with the airport operation manual requirements;
- d) Training of airside drivers and other personnel;
- e) Runway incursion prevention awareness campaigns for airside drivers and other personnel who are involved in runway operations; and
- f) Other recommendations applicable to ensure safe operations of aircraft within the aerodrome with respect to runway incursions.

5. Establishment and Maintenance of a Runway Safety Team

5.1 A runway incursion prevention programme should start with the establishment of runway safety teams at aerodromes. The primary role of the runway safety team should be to develop an action plan for runway safety, advise management as appropriate on potential runway incursion issues and recommend strategies for hazard removal and mitigation of the residual risk. These strategies may be developed based on local occurrences or best practices or combined with information collected elsewhere.

5.2 This team should also:

- a) Verify the compliance of markings, lights and signs with the MOAS, visible to airside drivers and other users;

- b) Identify potential new technologies that may reduce the possibility of a runway incursion;
- c) Ensure the compliance of airside related procedures with the MOAS;
- d) Develop and distribute runway safety educational and training material to airside drivers and other users, as necessary; and
- e) Identify and chart hot spots or problems areas at the aerodrome through outcome of investigation reports, international best practices or any other methods.

6. Data Collection and Analysis

- 6.1 ICAO defined a hot spot as “A location on an aerodrome movement area with a history or potential risk of collision or runway incursion, and where heightened attention by pilots/drivers is necessary”
- 6.2 Aerodrome charts showing hot spots should be produced locally, checked regularly for accuracy, revised as needed, distributed locally, and published in the Aeronautical Information Publication (AIP).
- 6.3 Once hot spots have been identified and charted, suitable strategies should be implemented to remove the hazard and, when this is not immediately possible, to manage and mitigate the risk. These strategies may include:
 - a) Awareness campaigns;
 - b) Additional visual aids (markings, lights and signs);
 - c) Use of alternative routings;
 - d) Construction of new taxiways; and
 - e) Mitigation of blind spots in the aerodrome control tower.

7. Compliance with the airport operation manual

- 7.1 Visual aids markings, lights, signs and airside-related procedures, provide critical information and guidance to airside drivers and other users at an aerodrome. The aerodrome operator should ensure that the implementation of visual aids and procedures in the aerodrome meets all relevant the airport operation manual requirements and implement maintenance programmes to ensure that they are clearly visible, adequate and unambiguous taking into account of different traffic intensities and visibility conditions.
- 7.2 As part of the operating Safety Management System (SMS) put in place by the aerodrome operator, the aerodrome operator should ensure that information about temporary work areas is adequately disseminated and that temporary markings and signs are clearly visible, adequate and unambiguous in all relevant conditions. A process should be put in place to ensure that

airside vehicles from the work area do not inadvertently wander onto the runway.

- 7.3 The aerodrome operator should also conduct regular internal audits on its contractors working within the maneuvering area to ensure a continued focus on runway safety in aerodrome works.

8. Training of Airside Drivers and Other Personnel

- 8.1 The aerodrome operator should put in place a formal training and assessment programme for all airside drivers operating at the airside to familiarize themselves with the aerodrome layout. Where possible, visits to the maneuvering area by the airside drivers and other personnel should take place for familiarization of markings, lights, signs.
- 8.2 The aerodrome operator should establish traffic/ airside rules with regard to driving in the airside and provide provisions for enforcement actions against airside drivers or any other person, when necessary.
- 8.3 The airside drivers should be licensed and be required to undergo periodic refresher training to maintain the currency of their licences. The aerodrome operator should also implement a process to ensure that airside drivers without the necessary training but are required at the airside, do not enter an active runway or other unauthorized area.
- 8.4 The aerodrome operator should also put in place a formal communications training and assessment programme for airside drivers who need to access the runway or other movement areas. Standard ICAO phraseologies should be used in all communications associated with runway operations.
- 8.5 The training provided should also ensure that the airside drivers immediately contact ATC when uncertain of their exact position on an aerodrome; if an airside driver realizes he is on a runway that airside driver should immediately vacate the runway.
- 8.6 It is important to point out that if there is any doubt in the mind of an airside driver when receiving a clearance or instruction, clarification should be immediately requested from ATC.

9. Runway Incursion Prevention Awareness Campaign

- 9.1 The aerodrome operator should also initiate runway incursion prevention awareness campaigns at their aerodromes. Airside drivers and other personnel involved in runway operations should be the audience for these campaigns.

- 9.2 The awareness campaign should be periodically updated to maintain its effectiveness and interest of the audience. The scope of such campaigns should also be adjusted accordingly depending on the operational needs.

10. Other Recommendations

- 10.1 Some other recommendations which the aerodrome operators should adopt to ensure safe operations of aircraft within the aerodrome especially in the aspect of runway incursion are as follows:
- a) Full aircraft or vehicle call signs should be used for all communications associated with runway operations;
 - b) Standard ICAO phraseologies should be used in all communications associated with runway operations;
 - c) Periodically it should be verified that airside drivers are using standard ICAO phraseologies in all communications associated with runway operations;
 - d) Read back procedures should include communications with vehicles operating on the Manoeuvring area;
 - e) All communications associated with runway operations should be conducted in accordance with ICAO language requirements for air ground radiotelephony communications. The use of standard aviation English at international aerodromes will improve the situational awareness of everyone listening on the frequency;
 - f) All communications associated with the operation of each runway (vehicles, aircraft on tow, etc.) should be conducted on the same frequency as utilized for the take-off and landing of aircraft; and
 - g) Short and simple messages should be used in ATC communications involving airside drivers.

11. Conclusion

- 11.1 A successful runway incursion prevention programme requires the collaboration of parties including but not limited to, aerodrome operator, air navigation services providers and aircraft operators as it relates to the aerodrome management, airside vehicular movements on the Manoeuvring area, air traffic management and the safe operations of aircraft.
- 11.2 In this regard, the aerodrome should also engage various stakeholders and relevant parties to ensure that the runway incursion prevention programme is a successful one.
- 11.3 Periodic review of the runway incursion prevention programme by the aerodrome operators should also be conducted to ensure that the programme

is in line with the aerodrome operators' own safety policy and performance targets, in compliance with the requirements found in the airport operation manual and in tuned to the latest technology, where possible.

