

CIVIL AVIATION AUTHORITY PAKISTAN **FLIGHT STANDARDS DIRECTORATE**



This Information Bulletin, adopted by Flight Standards Directorate aims to keep members of Pakistani Civil Aviation community updated on latest items of common interest and developments within the aviation industry. It is anticipated that, the bulk of material would be of relevance to AOC Holders, Training Standards and helpful to the Safety Managers who implement their policies.

The Bulletin is designed to serve the objective of Flight Standards Directorate that is "To improve upon Safety Standards".

INFORMATION BULLETIN

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RUNWAY INCURSION

Description

A 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 takeoff of aircraft”. (ICAO Doc 4444 - PANS-ATM).

Effects

An increased risk of serious collision for aircraft on the ground. When collisions occur off the runway, the aircraft and/or vehicles involved are usually travelling relatively slowly in contrast, when a collision occurs on the runway, at least one of the aircraft involved is usually travelling at considerable speed; this results in a much greater risk of serious damage and loss of life.

Most Common Types

- Departing aircraft runway entry contrary to ATC clearance
- Aircraft runway crossing after landing contrary to ATC clearance
- ATC runway occupancy clearance in error or misjudged
- Towed aircraft runway crossing contrary to ATC clearance

Typical Scenarios

- **ATCO-induced situation.** With Low Visibility Procedures in force because of fog, a controller gives a clearance to an aircraft without subsequently checking for a correct read-back from the flight crew who have misunderstood the instructions. Without checking the location of the first aircraft, which has entered the active runway contrary to clearance and at an intermediate point, the controller clears a second aircraft for a full length takeoff.
- **Flight Crew-induced situation.** An aircraft lands at an unfamiliar airport and the flight crew becomes disorientated as they exit the runway. Despite this, they acknowledge taxi instructions and without being confident of their position or the taxi route given, continue taxiing and inadvertently enter an active runway.

- **Driver-related situation.** Procedures at an airport allow the driver of a contractor's vehicle to operate airside without an escort (or the prior receipt of appropriate training and formal approval dependent upon satisfactory completion thereof). A driver of such a vehicle crosses an active runway without first obtaining ATC clearance.

Contributory Factors

- **Weather.** Low visibility may increase the chance of flight crew becoming disorientated and unsure of their position whilst taxiing. Low visibility is also likely to restrict a controller's ability to identify and follow aircraft visually so that cross-checking a reported aircraft position with its actual location may become impossible.
- **Aerodrome design.** If, as a consequence of aerodrome design, aircraft are obliged to taxi across active runways in order to get to parking, or to reach another active runway, the likelihood of runway incursions is increased. This risk may be reduced if the LRST identifies the Runway Hotspots thereby created and develops and applies effective risk mitigation. Operation with intersecting active runways is also likely to require careful consideration to ensure that risk of conflict is not thereby increased.
- **Multiple Line-ups.** Use of Multiple Line-ups for aircraft departures from the same runway at different entry positions increases the potential for error.
- **Conditional Clearances.** If these are used, the risk consequent upon any error in their issue or actioning may be increased especially because of aircraft identification errors. The chances of such errors are increased if aircraft livery does not readily correspond to the RTF callsign being used; this is sometimes the result of airline alliance livery policies or the ad hoc operational substitution of leased-in aircraft.
- **Simultaneous.** Use of Intersecting Runways Unless ATM SOPs are carefully formulated and rigorously applied, use of intersecting runways can significantly raise the risk of both runway incursions and Loss of Separation between aircraft near the ground and aircraft on the ground. At some airports where intersecting runways are used, especially in the USA, Land and Hold Short Operations are part of normal procedures. These are considered by some non-US aircraft operators to introduce an unacceptable level of additional risk; consequently, their flight crews are instructed to decline offers of such clearances.
- **Late Issue of Departure Clearances.** This may lead to a temporary lapse in flight crew situational awareness as the aircraft must be set up for the departure whilst taxiing.

- **Phraseology.** Use of Non-Standard Phraseology or non-adherence to Standard Phraseology can lead to clearance confusion and misunderstanding between flight crew and controllers.
- **Use of More than One Language for ATC communications.** At some international airports, locally-based users may communicate in the local language whereas foreign aircraft do so in English. Depending on the nature of the local language and the language skills of the visiting flight crew, this may have the effect of significantly reducing their awareness of the relative position of other traffic.
- **Workload:**
 - **Pilot Workload.** Shortly after landing, flight crew have to orientate themselves quickly in respect of taxiways and airport layout. After clearing the landing runway, they also have to reconfigure aircraft systems in accordance with the After Landing Checks and may receive detailed taxi instructions from ATC. Similar levels of workload may occur prior to departure while the flight crew are concurrently carrying out tasks including configuring the aircraft systems ready for take-off, briefing crew and passengers, receiving amended departure clearance instructions from ATC, checking unfamiliar departure procedures, etc. Under these circumstances of high workload, a temporary loss of situational awareness or communications confusion are more likely to occur.
 - **Controller Workload.** Controllers handling multiple aircraft movements and handovers have relatively little time available for monitoring individual aircraft to confirm that they are taxiing in accordance with their clearances.
- **Distraction:**
 - This is the immediate cause of many incursions, although the context in which it occurs is often of more direct relevance to effective risk mitigation

Defences

Available defences relate to both the occurrence of runway incursions and the danger thereby created. The role of Safety Nets as a last line of defence against error is increasingly valuable at busy airports with complex movement areas. Not in any order of significance these defences include:

- Maintenance of situation awareness by flight crew and others using the manoeuvring area, specifically in respect of their own location in relation to active runways, and that of other aircraft and vehicles relative to active runways.
- Maintenance of situation awareness by TWR and GND ATCOs in respect of aircraft and vehicle disposition and movements near to active runways.
- Flight Crew use of the TCAS display to provide situational awareness of other aircraft both in the air and on the ground.
- Effective flight crew use of appropriate features of RAAS if installed.
- Where installed, effective procedures for the use of Enhanced Vision Systems (EVS) for improved awareness of runway occupancy.
- Use of ICAO Standard Phraseology at all times to minimize any risk of clearance confusion.
- Presence of ICAO standard Runway Markings and Taxiway Surface Markings and Signs.
- Presence of ICAO standard Runway Lighting and Taxiway Lighting including the installation of Runway Guard and Status Lights.

Acronyms

LRST: Local Runway Safety Teams

RTF: Radio Telephony Frequency

ATM: Air Traffic Management

RAAS: Runway Awareness Advisory System

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