ENAIRE

Runway incursions (I)

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Operations

If a vehicle is on the runway when it shouldn't be, it is deemed an incursion that affects operational safety

Any event involving the improper presence of an aircraft, vehicle or person in the protected area of a surface designated for landing or departing aircraft is a runway incursion

Safety, Quality and Environmental Division

This is a well-known and analysed situation that has safety measures associated with it, both through the implementation of operational safety management systems and through working groups created for this purpose (such as the Local Runway Safety Committee) and specific actions aimed at reducing its occurrence. However, runway incursions remain a recurring problem.

The **effective prevention of runway incursions** thus requires collaboration between all parties involved: airport managers, air navigation service providers, airlines and national supervisory and regulatory authorities. During operations, this involves the direct and coordinated involvement of controllers, pilots, vehicle drivers and anyone with access to the airside of an airport.

European Action Plan EAPPRI 3.0

In general, the fundamental challenge to preventing these incursions is to ensure that pilots and drivers who are on a runway without proper ATC clearance realise that they should not be there.

The latest update to the European Action Plan for the Prevention of Runway Incursions, (EAPPRI v3.0) provides a compilation of **best practices and guidance materials** for air navigation service providers and air traffic controllers.

It also contains specific recommendations in this regard, such as:

- Include runway safety aspects both in the **briefing** and in the initial and refresher **training** of air traffic controllers.
- Implement, update or enhance procedures

aimed at maintaining good **situational awareness** of both pilots and vehicle drivers.

- Review the current procedures and support the implementation of measures aimed at **enhancing memory aids** and the availability of technological alerts.
- Strengthen **technological support** as much as possible (safety nets, A-SMGCS, etc.).
- Establish **joint procedures** with the airport to deal with the case of an aircraft or vehicle that becomes lost or is uncertain of its position, and regularly review and test these procedures.
- Joint **regular review** by the air navigation service provider and the airport manager of **runway inspection procedures**.
- **Avoid conditional clearances** as much as possible.
- **Use of the runway designator** in instructions to enter, cross or hold short of a runway (approach the edge of the runway without reaching the holding point).
- **Review runway capacity regularly** to identify potential threats and, if necessary, develop appropriate mitigation strategies.
- Evaluate the **operational use of lighting** to ensure an effective runway protection policy.
- Assess restrictions to the **sight lines from the tower visual control room** that have the potential to impact the ability to see the runway, implementing short-term mitigations and identifying longer term improvements whenever possible.
- Other recommendations involving **ergonomics, visual scans** of the runway and **special attention to aircraft vacating a runway**, especially when the taxiway may lead directly to another runway.
- Finally, it lays out the recommendation to apply **TRM principles** (training on behavioural skills and human factors for teamwork, which were discussed in Safety Clip 01) in operations.

SHERC Safety Study

Particularly relevant in this context are those incursions in which, once the conflict on the runway has begun, the time available to the controller to prevent a collision might be less than necessary, known as **SHERC (Sudden High-Energy Runway Conflict)**.

The **safety study conducted by EUROCONTROL** on SHERC concludes that there are currently no effective barriers to significantly reduce this risk. However, it states:

1. The **incorporation of multiple technology layers** is currently the most effective response to SHERC.

2. It identifies **available barriers** that can prevent potential runway incursions that, if not avoided, could evolve into SHERC. These barriers include the use of H24 stop bars, reinforced with procedures that instruct personnel not to cross an illuminated stop bar, memory aids (strip marking, etc.), use of precise phraseology and combined visual surveillance (both controller and pilot).

3. **During ATC training**, it is important to emphasise the correct use of memory aids, visual surveillance and accurate phraseology in ATC clearances, since the visual detection of a SHERC event may be limited by weather and environmental conditions.

4. Operational safety can be significantly enhanced if barriers are **implemented alongside procedures** (the use of H24 stop bars reinforced with the procedure of not crossing them when they are illuminated could prevent a significant number of runway incursions).

In **conclusion**, runway incursions result from a combination of various aspects such as the environment, the airport configuration, the technological aids available, procedures, training and behavioural habits, all of which are key factors that must be emphasised to prevent their occurrence.

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Link to the SHERC study