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<https://www.boldmethod.com/blog/lists/2018/11/eleven-ways-to-avoid-getting-hit-on-the-ground>

S a f e t y N e w s l e t t e r



Newsletter n°11 May 2021

The International Civil Aviation Organisation (ICAO), through its Doc 4444 defines 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”*.

In 2001, ICAO took action in response to the real threat posed by this type of occurrence and began to identify a multitude of areas that were closely related to runway safety, such as Human Factors, equipment or aerodrome lights among others.

Runway incursions are not a new development that can lead to safety problems, but they are becoming more and more common and can sometimes trigger accidents with catastrophic consequences.

Statistics show that most runway incursions occur during visual conditions and daylight hours, with the majority of accidents occurring at night or in low visibility conditions.



There is an increasing availability of reports of runway incursion incidents, which is a positive indication of the commitment of organisations and operational staff to prevent them. In order to do so, it will be necessary to identify the recorded incidents through a severity classification.

However, regardless of the severity of the occurrence, all incursions should be properly investigated to determine the causes that led to them, as well as the existing contributing factors and to ensure that the necessary mitigation measures are in place to prevent a recurrence.

Through these investigations, it will be possible to detect factors that are present in the system long before the event occurs, referred to as “latent conditions”. These conditions do not trigger accidents as such, but weaken the defence barriers of the system and expose the risks that exist after the accident has occurred.

Defences in aviation are often the ultimate safety net, but they are breached by latent conditions if they cannot be strengthened or new defences are created.

To this end, runway incursions prevention programmes are being implemented in the different organisations, which are characterised by the creation of local runway safety teams that are helping to facilitate the local implementation of the recommendations provided through documents such as the

European Action Plan for the Prevention of Runway Incursions (EAPPRI) produced by Eurocontrol.



Many of these recommendations have already been implemented while those that have not yet been implemented are due to factors such as system rigidities, existing procedures or operational constraints among others.

Organisations should consider the positive effects that these recommendations can generate, evaluate them against their system and consider their implementation.

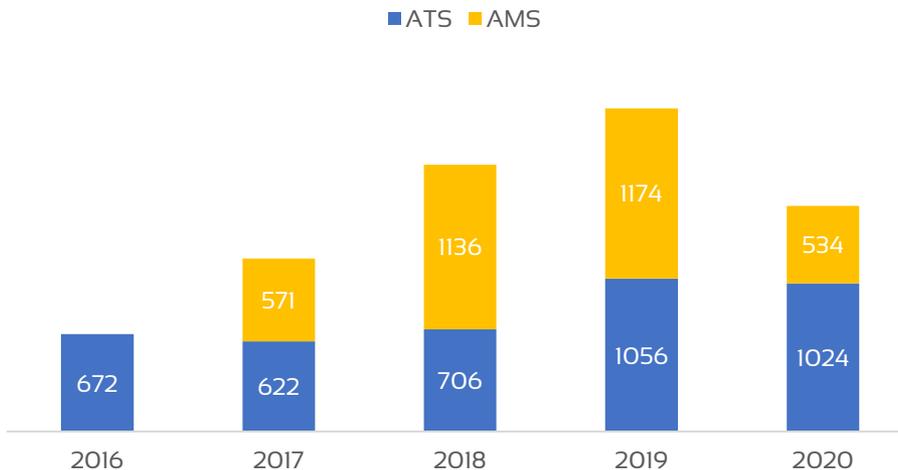
SAERCO as an air navigation service provider has investigated 100% of the events related to runway incursions, including and defining a SAC (Safety Criteria) directly related to these which is monitored both monthly and semi-annually.

- <https://www.flap152.com/2011/02/el-modelo-de-reason.html>
- <https://www.skybrary.aero/bookshelf/books/482.pdf>
- <https://www.skybrary.aero/bookshelf/books/4093.pdf>
- <https://ops.group/blog/wp-content/uploads/2017/03/ICAO-Doc4444-Pans-Atm-16thEdition-2016-OPSGROUP.pdf>
- <https://shackelford.law/news-aviation/faa-to-use-icao-definition-of-runway-incursion/>

Safety Reporting ATS SAERCO 2020		
MOR/VOR	Average time to report	Average time to MOR/VOR
1024	2:36:55	35:09:28

Safety Reporting APRON SAERCO 2020		
MOR/VOR	Average time to report	Average time to MOR/VOR
534	1:31:53	38:42:20

SAERCO reporting evolution 2016-2020



“Achieving a reporting system where proactivity is the norm is not easy, it requires the effort and commitment of the entire organization, especially the operational personnel”

SAERCO, thanks to the continuous improvement of its occurrences reporting tools and to the involvement of all employees in this task, manages to continue to exceed year after year the number of reports made about events occurring in the different ATS/CNS/MET units, in addition to the Apron Management Service (AMS) at Adolfo Suárez Madrid – Barajas airport, strictly complying with the reporting times required by AESA.

The above-mentioned reporting times have been reduced generally, with all units reporting events together on specific days of the week. This measure allows SAERCO to manage with quality the wide volumen of events reported by all the operational personnel.

The unusual 2020 characterised by the pandemic caused by COVID-19 has generated a decrease in the sector with operating values of up to -80%. Therefore, together with the introduction of two new operational units in Norway (Ålesund-Vigra y Kristiansand-Kjevik), it should be mentioned that the number of notifications in the ATS units has remained relatively constant compared to the previous year, reflecting the awareness of the reporting culture throughout the organisation. On the other hand, there has been a reduction in the number of AMS notifications due to the consequences of the pandemic and the drastic reduction in traffic volumes due to the various mobility restrictions in place throughout 2020.

The 2020 statistics and the evolution of these highlight the proactivity in the organisation and confirm the effectiveness of SAERCO’s occurrence reporting system, a tool that has been consolidated as a basis for improving the level of operational safety in all its units.

Regulations concerning the prevention and mitigation of runway incursions

As stipulated in Regulation UE2015/340, runway incursion is part of the required syllabus for the aerodrome control licence, and therefore, coupled with this knowledge and various runway incursion programmes, the aim is to mitigate these occurrences.

Runway incursion prevention programmes should begin with the establishment of a runway operational safety committee as stipulated in ICAO Document 9870. In this way, a runway safety action plan can be developed recommending strategies to eliminate hazards and mitigate associated risks.

The runway operational safety teams will help improve safety by collecting and processing runway incursion data, identifying local problem areas, developing initiatives and ensuring compliance with established procedures.

One of the functions relating to these working groups is the implementation of recommendations to prevent runway incursions. According to Document 9870, the recommendations it sets out are the result of a systematic analysis of a series of runway incursions, the purpose of which was to identify the causes and contributing factors, such as active and latent failures, that led to the incidents that occurred.

These recommendations will be addressed to different components of the system, such as

pilots, ANSPs, aircraft or aerodrome operators among others.

In addition to the recommendations issued by the ICAO, Eurocontrol establishes others through the European Action Plan for the Prevention of Runway Incursions (EAPPRI).



The implementation of the above recommendations will not ensure the full removal of the hazards and risks involved, so runway incursions will continue to occur. These will need to be addressed and analysed to avoid their recurrence or at least minimise their frequency of occurrence, so tools such as the Runway Incursion Severity Classification (RISC) developed by ICAO will be useful.

This tool will classify the severity of runway incursions according to “A”, “B” or “C” classifications, based on proximity between involved aircrafts as well as factors such as the size and characteristics of the aircraft or the current visibility for example.

Various organisations have been mentioned throughout the article, such as ICAO and Eurocontrol, which together with the Federal Aviation Administration (FAA) are the main agents for reducing risks related to incursions through regulation and documentation.

However, it should be noted that there was no agreement on the concept of runway incursion to delimit the number and scope of certain variables, and different definitions have been standardised around a similar concept.

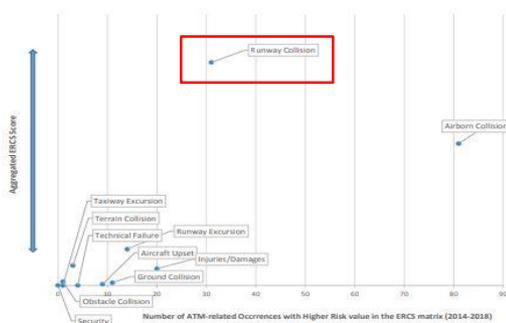
For example, in 2007 the FAA began to adopt the definition proposed by the ICAO, which indicates that any unauthorised intrusion on a runway, regardless of whether or not there is a potential conflict, is considered a runway incursion. Previously, the FAA did not consider incidents without potential conflict as “surface incidents”.

Likewise, ICAO is the only organisation that has identified certain recurrent situations when classifying runway incursions according to those involved and the actions they perform. In addition, these are classified according to their severity with the aim of determining and recording in a database the different classifications and severities of the events recorded through tools such as the RISC mentioned above.

<https://shackelford.law/news-aviation/faa-to-use-icao-definition-of-runway-incursion/>
https://www.seguridadaerea.gob.es/sites/default/files/buenas_practicas_prevenir_mitigar_incursiones_pista.pdf
<https://eur-lex.europa.eu/legal-content/ES/TXT/PDF/?uri=CELEX:32015R0340&from=es>
https://www.skybrary.aero/index.php/ICAO_Doc_9870_Manual_on_the_Prevention_of_Runway_Incursions

Aerial accidents/incidents due to runway incursions

In the ATM field, accidents related to ground collisions, including those events caused by runway incursions by aircraft, vehicles or personnel, make this one of the most dangerous areas due to the risk associated with them and their probability of occurrence.



Most of these incursions are generally of no consequence for flight safety, but on certain occasions they have been the cause of major accidents and incidents, such as some of the following:

On 8 October 2001, the perspective on the risk involved in runway incursions was changed by the collision at Milano-Linate Airport between a SAS MD-87 and a Cessna, with the tragic result that 118 people died, including occupants of both aircraft and workers at a baggage store near the impact site. The existence of a series of latent conditions at the airport, coupled with

the failure of various barriers caused the Cessna incursion onto the runway where the MD-87 was taking off, with a subsequent collision between them in very poor visibility conditions.

On 27 March 1977, the most serious accident in aviation history occurred when a KLM B747 collided with a PAN AM B747, leaving 583 people dead.

A succession of errors, technical failures, wrong decisions and unusual situations in the environment led to the unauthorised take-off of the KLM, which was unable to avoid the American airline's aircraft that was clearing the runway at the time of the crash.

Among the main factors that triggered the tragedy were KLM's flight plan clearance not its immediate take-off, as well as runway taxiing manoeuvres due to high congestion at the airport and the use of inappropriate phraseology for communications between tower and cabin crews.



As a result of this event, the phraseology between pilots and ATC was modified, as well as significant safety changes.



Nevertheless, not all runway incursions have a fatal outcome, being the aforementioned accidents considered as isolated events.

As an example, on 3 February 2018 at London-Gatwick Airport a runway incursion incident occurred when an Aer Lingus A320 was decelerating after landing on runway 26L.

It was about to leave the runway via a fast exit lane when a vehicle, which was at a holding point and was going to carry out a runway inspection, entered the runway without waiting for the aircraft to clear. The aircraft left the runway after the runway incursion by the vehicle without any consequences for any of the parties involved.

<https://www.skybrary.aero/bookshelf/books/5420.pdf>
https://elpais.com/diario/2001/10/09/internacional/1002578435_850215.html
https://elpais.com/diario/2001/10/09/internacional/1002578435_850215.html
<https://www.easa.europa.eu/sites/default/files/dfu/Annual%20Safety%20Review%202019.p>

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