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Safety Newsletter

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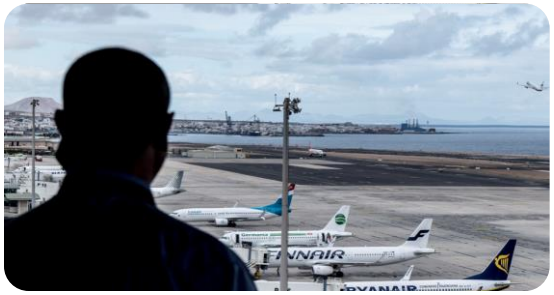
Continuous, clear, concise and precise ground-to-air communications are vital to secure air traffic management. Achieving this is sometimes not easy, there are a number of factors such as workload, fatigue, distractions, misuse of language, human error and failure of communications systems (eg. interference) that can negatively affect the communications between pilots, vehicle drivers and air traffic services / management on the apron.

According to *ICAO Document 9870 Manual on the Prevention of Runway Incursions*, Chapter 2 CONTRIBUTORY FACTORS: 2.2 BREAKDOWN IN COMMUNICATIONS:

[...] A breakdown in communications between controllers and pilots or airside vehicle drivers is a common factor in runway incursions and often involves: a) use of non-standardized phraseology; b) failure of the pilot or the vehicle driver to provide a correct readback of an instruction; c) failure of the controller to ensure that the readback by the pilot or the vehicle driver conforms with the clearance issued; d) the pilot and / or vehicle driver misunderstanding the controller's instructions [...]

The foregoing can be extrapolated to any type of events that involve communications between the different actors previously listed in which misunderstandings occur in communications, which although they may occur in a favorable context, in certain situations may give rise to security incidents where the different actors involved did not follow the established procedures / instructions provided for a number of reasons in which in any case they were identify failures in the communication process essentially related to three fundamental aspects:

- Phraseology
- Readback / Hearback
- Understanding of Communications / Instructions



The effect that an event of this type generally has is a potential reduction of the situational awareness of some or all of the actors involved in the operation. We understand situational awareness as the perception of the elements existing in a specific environment (volume of time and space determined), the understanding of their meaning, and the projection of their state in the near future. In relation to the thing before:

- Perception involves monitoring, detecting elements and their recognition (being able to perceive that something is happening)
- Comprehension involves understanding the situation, in terms of the ability to understand what is happening and recognize patterns, (what type of situation occurs, and be able to solve it
- Projection involves anticipating the development of the situation, in terms of being able to prevent it or prevent it from escalating further.

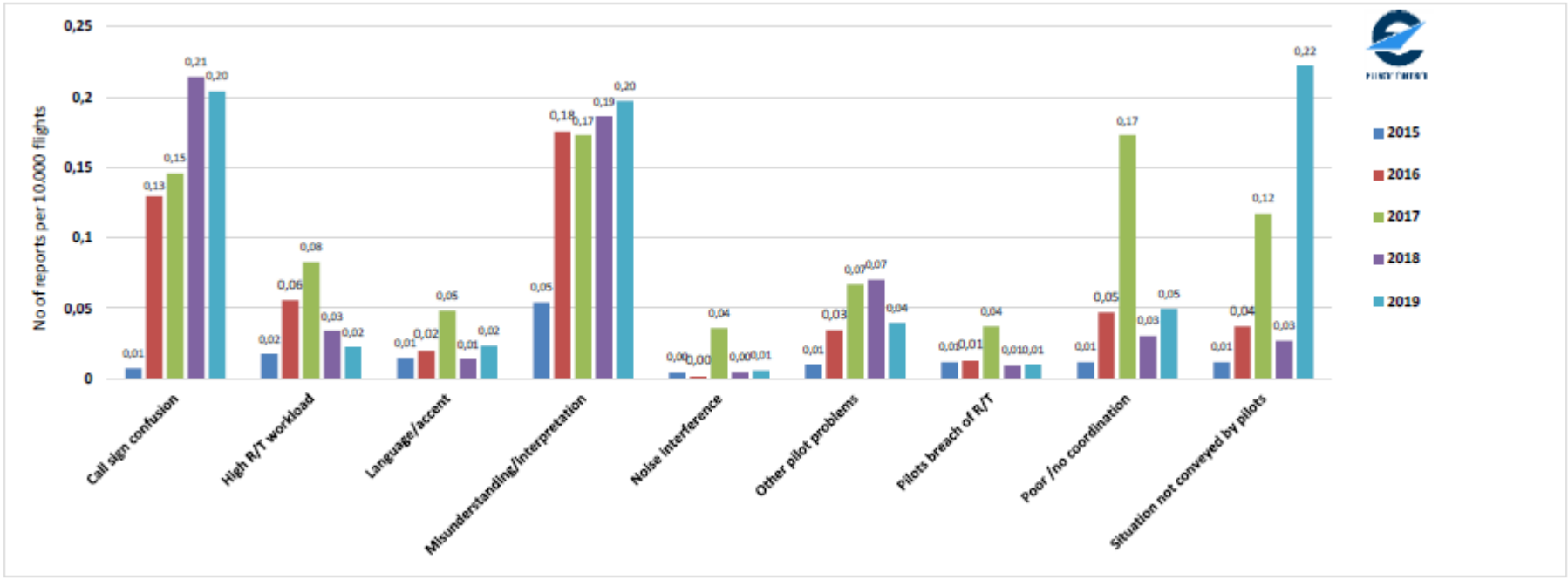
There are a series of initiatives to address the suitability and security of communications and which are reference at an operational and security level. Thus, EUROCONTROL developed the European Action Plan for Air - Ground Communication Safety, a document that identifies different problems associated with T / A communications, such as:

- Indicative confusion
- Prolonged loss of communications
- Lack of radio discipline
- Frequency locks

For its part, AESA developed the Good Practices Guide in Phraseology and Communications, also focused on the relationship of previous problems

https://www.seguridadaerea.gob.es/sites/default/files/guia_bp_fraseologia_y_comunicaciones.pdf
https://www.eurocontrol.int/publication/european-action-plan-air-ground-communications-safety

thestatistics: misunderstanding



EUROCONTROL Voluntary ATM Incident Reporting (EVAIR) includes in its bulletin No. 22 corresponding to the period 2015-2019 a series of relevant statistics considering communication misunderstandings as a contributory factor of safety incidents.

In 2019, misunderstandings in G/A communications were considered as one of the 7 largest contributory factors of the occurrence of safety incidents identified in the EVAIR database.

The most common situations that occur as a result of these misunderstandings are often related to:

- The pilot or ATCO / AFIS / SDPO do not use standard phraseology, leading to misinterpretation of the message
- Part of the message is lost due to radio interference / frequency blocking
- Callsings confusion
- The pilot does not hear back part of the communication, which is not detected and corrected by ATCO / AFISO / SDPO
- Communication is incorrectly read back by the pilot, which is not detected by ATCO / AFISO / SDPO
- The pilot assumes a communication directed to another aircraft

; which in turn can lead to safety incidents, such as airspace infringements, separation minima infringement, AIRPROX, runway / taxiway incursions, etc.

https://www.skybrary.aero/bookshelf/books/6111.pdf
https://www.skybrary.aero/index.php/Air-Ground_Voice_Communications#Types_of_Communication_Breakdown

lessonslearned:

Communication breakdown

Thankfully, there are not many situations caused by frequent misunderstandings between controllers and crews that result in incidents or accidents with catastrophic consequences, but it is a constant threat that must be avoided in order to prevent the repetition of past mistakes, such as:

Perth Airport, 15th June 2012

On 15th June 2012, an incident occurred between a Piper PA-42, which was lined up on runway 21 but not cleared for take-off, and a vehicle operating on the airside to check RVR.

The vehicle did not comply with the instruction issued from TWR by ATC largely due to the use of non-standard phraseology which resulted in the vehicle entering the runway where the aircraft was located.

There was no real risk of conflict as, although the low visibility procedures (LVP) were still active due to previous fog, the controller was able to visually detect the incursión and, therefore, did not authorise the aircraft to take off, avoiding a major conflict.

Throughout the communications transcribed in the final investigation report between the pilot and the vehicle, there is a constant use of non-standard ATC phraseology with instructions such as "Safety 2 (vehicle) cross runway 24 and proceed to the threshold runway 21", which were not understood by the vehicle thath ended up entering the threshold of runway 21.

The lack of understanding is repeated throughout the communication between the two parties involved, even after a few minutes after which the vehicle still does not understand ATC's instructions after having entered runway 21:

- **ATCo**: Safety 2 affirm, vacate runway 21, and proceed up Alpha, cross runway 24 to the threshold runway 21.
- **Vehicle**: Vacate runway 21, proceed up Alpha to, ah, just confirm the threshold of runway 03?

John F. Kennedy International Airport, 27th June 1999

On 27th June 1999, an Air France Boeing 747 nearly collided with an Icelandair Boeing 757 after the former had landed on runway 22L.

After the landing, the following communication between the controller and the aircraft took place:

- **ATCo:** Proceed via taxiway J and hold short of runway 22R
- **Pilot:** Okay straight ahead on juliet and no hold short on 22 right

Wrong readbacks of instructions such as "hold short of" can lead to runway incursions as was the case when the controller failed to detect the misunderstanding by the Air France crew, which crossed runway 22R with Icelandair's B757 taking off on runway 22R.

A misunderstanding by crews of the term "hold" ("Stop whatever you are doing" in the aeronautical context, "keep doing it" in a colloquial context) is a repetitive causal factor, as also observed in the following event:

Los Angeles International Airport, 22nd November 1999

An Aeromexico McDonnell Douglas MD80 came close to colliding with a United Airlines Boeing 757 as the former crossed runway 25R at the same time as the B757 was taking off from runway 25R. After the MD80 landed on runway 25L, the following communication between controller and pilot occurred:

- **ATCo**: Proceed via taxiway N and hold short of runway 25R
- **Pilot**: November cross 25R

Mistakes in readbacks, lack of understanding or incorrect use of standard phraseology are causal/ contributory factors in events that sometimes have the worst of outcomes.

https://skybrary.aero/sites/default/files/bookshelf/2181.pdf
http://www.aaiu.ie/sites/default/files/ANSV%20Italy%20Accident%20Boeing%20MD-87%20SE-DMA%20and%20Cessna%20D-IEVX%20Milan%20Linate%20Airport%202001-10-08.pdf
https://oa.upm.es/38376/1/PFG_CRISTIAN_ARONNA_MALLIA.pdf

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