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AIR PILOTS - COMMERCIAL AIR TRANSPORT SAFETY BRIEFING NOTE 21

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AIRBORNE CONFLICT CLOSE TO A RUNWAY

The Context

Whether because of lack of situational awareness or misjudgements by pilots or controllers, aircraft-to-aircraft conflicts sometimes arise in the vicinity of an airport between an aircraft which has just taken off and another which has is on final approach to the same mixed mode runway. This can also happen with two runways which intersect or have intersecting extended centrelines. A broad awareness of how things could go wrong may help in recognising and responding to such risks. If a flight crew recognises a potential low-height or on-runway related conflict risk without signs of a timely resolution by the controller, then an opportunity to act before the situation deteriorates may exist. A sensible safety margin is obviously better than a 'close call'.

Some examples of aircraft-aircraft airborne conflicts in vicinity of active runways

- In 2020, an Embraer 195 on final at Sao Paulo Congonhas in day VMC was cleared to land on a runway occupied by a Boeing 737-800 cleared to line up and wait. Despite the 195 querying the presence of an aircraft on the runway, only a call from the 737- based on their TCAS display - prompted the controller to order the 195 to go around - with a 72 feet clearance overhead the 737.¹
- In 2022, an Airbus A320 departing the uncontrolled airport at Hayden CO began its day VMC take-off from the only runway after an inbound aircraft had already made a CTAF call that it would be landing in the opposite direction and assuming that the inbound aircraft was landing after their departure in the same direction. Only the unseen inbound aircraft's alert led the Captain to rotate at VR-24 (a serious tailscape occurred) and deviate laterally - minimum separation was less than 500 metres.²
- In 2023, a Boeing 767-300 self-initiated a night go-around at Austin TX with LVP in force when it became obvious that a departing Boeing 737-700 cleared to "line up and take-off" would be unlikely to make a rolling takeoff in the prevailing freezing fog conditions. As the 737 subsequently rolled, the 767 passed overhead with 190 feet clearance. The controller was unable to see either aircraft. The airport had parallel runways available but no surveillance or effective ground conflict alerting system.³
- In 2023, an Airbus A321 was cleared for take-off at Sarasota-Bradenton FL in night VMC with an inbound Boeing 737-800 at 3 miles already cleared to land on the same runway. Take-off was slow to commence and the delay was not monitored by ATC so the 737 crew, seeing the runway was still occupied, initiated a late go-around. The go-around call alerted ATC to instruct the 737 to immediately turn off the runway centreline and airborne separation was 0.6nm at the same-altitude.⁴
- In 2023, a Boeing 737-800 told by the Stuttgart TWR controller to expect a late landing clearance in night VMC was instead given a very low go-around (and an "immediate left turn") when the controller finally recognised having failed to ensure adequate separation from a departing Airbus A321. The two aircraft then climbed on almost identical profiles less than a mile apart until the 737 could - as instructed - safely turn left.⁵
- In 2024, a Boeing 737-800 on a day VMC approach to Tenerife North was told to expect a late landing clearance once an Embraer 190 "just starting its take-off" was airborne. When landing clearance was given at

¹ https://sistema.cenipa.fab.mil.br/cenipa/paginas/relatorios/rf/pt/PR-AJJ_PR-GUD_03_12_2020-PUB.pdf

² <https://data.nts.gov/carol-reggen/apiAviation/ReportMain/GenerateNewestReport/104551/pdf>

³ <https://www.nts.gov/investigations/AccidentReports/Reports/AIR2402.pdf>

⁴ <https://data.nts.gov/carol-reggen/apiAviation/ReportMain/GenerateNewestReport/106768/pdf>

⁵ [https://www.bfu-web.de/EN/Publications/FinalReports/2026/Report_23-1010-](https://www.bfu-web.de/EN/Publications/FinalReports/2026/Report_23-1010-EX_A321_Stuttgart.pdf?_blob=publicationFile&v=2)

[EX_A321_Stuttgart.pdf?_blob=publicationFile&v=2](https://www.bfu-web.de/EN/Publications/FinalReports/2026/Report_23-1010-EX_A321_Stuttgart.pdf?_blob=publicationFile&v=2)

100 feet agl with the runway still occupied, the 737 was already making a go-around. The minimum airborne separation was 1.1nm at the same altitude as the 737 deviated left of the runway centreline in order to keep the Embraer in sight. The TWR position was occupied by an inadequately supervised student controller.⁶

Discussion

The potential risk of a mid-air collision within in the immediate vicinity of an airport whilst taking off or landing is often found to originate from an air traffic controller misjudging the safe use of a mixed mode runway for a landing immediately following a take-off. The immediate cause of this loss of separation risk is likely to be by the controller's late recognition of the risk when it could have been avoided by earlier action. This most often occurs because whilst a controller often recognises in good time that their plan may not work, they continue with it in the hope that it will succeed. An instruction to the aircraft expecting a landing clearance to instead go around will then be potentially unsafe if the usual straight ahead go around is given rather than a variation involving a turn to the left or right soon enough to ensure safe separation and adequate terrain/obstruction clearance.

The ability of the pilots involved to deconflict their flight paths visually is of course prevented by being in cloud or very low visibility conditions and at night can be hindered even in good visibility if the navigation lights of whichever aircraft is ahead are not readily visible to the one behind. However, the key risk mitigation for pilots on approach is not to continue in the expectation of a late landing clearance being given when this becomes increasingly unlikely but instead to initiate a go around proactively as soon as the potential conflict situation is recognised. Unless a collision risk is perceived, a self-initiated go-around should normally follow the standard procedure unless any explicit alternative instructions have been given by ATC.

Safety Recommendations

To Aircraft Operators

- Suitably challenging and unexpected go-around scenarios should be introduced during both initial and recurrent full flight simulator training without more than a general pre-briefing of expectations with after-session de-briefing including careful and comprehensive discussion of any issues which warrant it. These scenarios should include ones based on a mishandled touchdown by a preceding aircraft which then rejects the landing but may have left debris on the runway without ATC awareness.
- All full flight simulator training programmes should ensure that the ATZ conflict scenario is, over time, covered in both day and night conditions and in a range of in-flight visibility at an established minimum frequency.
- All pilots should be suitably briefed on the importance of avoiding the need for a low level go-around commencement when the issue which has finally prompted it was foreseeable much earlier in the approach as a quite likely potential outcome.
- If flight operations involve a specific route network, a review of all destination or standard alternate airports could usefully be made to identify any locations where potential traffic density or multiple runway use may be associated with an above average risk of airborne separation issues between arriving and departing aircraft originating from any cause including ATC misjudgements.
- If flight operations include service to airports in class 'F' or 'G' airspace (which are within 'uncontrolled' airspace) - then the Operations Manual should detail the arrangements for all aspects of operational safety risk management including procedures relating to the avoidance of any loss of safe separation.

To Aircraft Commanders

- Always ensure that an attempt is made to understand the ATC context for the expected take-off or landing by ensuring that all related transmissions once on the TWR frequency are monitored from the passive perspective of "what could possibly go wrong". This will help prepare both pilots for unexpected changes in the situation being managed by the TWR controller and the potential consequences.
- Always ensure that the approach briefing and departure briefings fully familiarise both pilots with what might potentially alter safe separation from other traffic during the expected normal sequence of airborne events when on final approach or once airborne and making the initial climb.
- Ensure that every approach briefing includes the need for a timely go-around if the absence of a landing clearance is because the runway is occupied by either a departing or a just-landed aircraft. A go-around in such circumstances should be proactively commenced in sufficient time to preclude any risk of airborne conflict with another aircraft. This briefing should recognise that the timing of such a decision is likely to be influenced by both in-flight visibility and whether daylight prevails or not.

⁶ https://www.transportes.gob.es/recursos_mfom/comodin/recursos/in-031-2024_final_report/pdf