

The Honourable Company of Air Pilots is the largest City of London Livery Company and the only one with a global membership. London Livery Companies are charitable specialist professional and trade bodies which, where relevant, seek to contribute their entirely independent and impartial expertise to their areas of interest. The Air Pilots Commercial Air Transport Team is directly supported by a large network of Company Members who review and validate our draft publications before issue.

If you would like to receive copies of new Safety Briefing Notes direct by email - or stop receiving them - please advise this to catcsg1@airpilots.org. All published Notes which continue to be relevant can be consulted at or downloaded from <https://www.airpilots.org/CATSafetyBriefingNotes/>.

AIR PILOTS - COMMERCIAL AIR TRANSPORT SAFETY BRIEFING NOTE 17

[Issued 07 July 2025]

REJECTED TAKE OFFS

The Context

A Rejected Takeoff (RTO), especially but not only one begun from high speed, is an infrequent event. The decision making and potential action involved is therefore routinely part of initial and recurrent training. Despite this, takeoffs which should have been rejected are sometimes continued and aircraft control during those takeoffs which are rejected from any speed is not always well managed.

Inconsistent or unreliable airspeed indications are a relatively common reason for rejecting a takeoff, but there are others including incorrect critical data input, engine malfunction, directional control difficulties, conflicting traffic or other obstruction observed ahead on or entering the runway (see Safety Briefing Note 13) and when ATC issues an instruction to stop. Low speed rejected takeoffs are usually less challenging but this is not guaranteed. Greater potential risk accompanies high speed rejected take offs especially any commenced after V_1 when, unless the aircraft is assessed as unfit to fly, the takeoff should usually be continued. Rejection will also be appropriate if it is recognised, or ATC advises, that takeoff has been commenced on a taxiway, on the wrong runway or from an incorrect intermediate runway access to the correct runway.

Some examples of rejected take off scenarios

- In 2021, an Airbus A320 takeoff from Heraklion by a low experience PF First Officer was rejected by the Captain due to their perceived lateral runway excursion risk after they had unconsciously initiated rotation. Overrun was avoided but serious nose landing gear and resultant airframe structural damage due to a harsh de-rotation went undetected and a subsequent crew later had to deal with multiple secondary consequences and a make return to land.¹
- In 2020, a Boeing 737-800 wet runway takeoff from East Midlands in strong crosswind by the Senior First Officer was rejected above V_1 by the Captain after taking control due to windshear despite company SOPs explicitly excluding this situation as a justification for rejection even if not above V_1 .²
- In 2021, an Airbus A320 taking off from Atlantic City ingested a large bird into one engine with immediate engine distress evident and take off was rejected before V_1 . Once stopped, a fuel-fed fire ignited within the affected engine cowling and an emergency evacuation was completed.³
- In 2019, a Boeing 737-800 First Officer began a night takeoff at Amsterdam on a parallel taxiway instead of the runway. A high speed rejected takeoff only occurred when ATC instructed it. Neither pilot noticed the taxiway lighting or that the taxiway width was only half that of the adjacent runway.⁴
- In 2020, an Airbus A320 takeoff at Brisbane was rejected at low speed by the Captain following a prompt takeover of control after the PF First Officer had tried to maintain directional control with asymmetric rudder despite indications of right engine malfunction.⁵

¹ https://www.bfu-web.de/EN/Publications/FinalReports/2024/Report_21-0555-2X_A320_Kavala.pdf?blob=publicationFile&v=4

² https://assets.publishing.service.gov.uk/media/5fabbe4f8fa8f56d98259e85/Boeing_737-86N_G-DRTN_12-20.pdf

³ <https://data.nts.gov/carol-repgen/api/Aviation/ReportMain/GenerateNewestReport/104029/pdf>

⁴ https://onderzoeksraad.nl/wp-content/uploads/2023/11/aborted_takeoff_from_taxiway.pdf

⁵ <https://www.atsb.gov.au/sites/default/files/media/5780127/ao-2020-058-final.pdf>

- In 2019, an Embraer 170 Captain did not immediately reject a tailwind takeoff from Yamagata when a nose wheel steering input did not correct a slight drift off the centreline. A delayed rejection with only thrust levers retarded and no attempt at braking resulted in a veer-off at over 50 knots.⁶
- In 2024, a type-experienced Boeing 777 First Officer inexplicably responded to the V₁ call at London Gatwick by reducing thrust then briefly restoring it before rejecting takeoff from 7 knots above V₁.⁷

Discussion

Operator procedural guidance on who can call for a rejected takeoff and who will then reject it must be unambiguous and if appropriate distinguish between which pilot is acting as PF. Once V₁ has been exceeded, only exceptional circumstances are likely to justify action to reject a takeoff and should rotation have commenced, abrupt de-rotation should be avoided to preclude structural damage.

Some operators use a manufacturer-approved modified V speed sequence when taking off in significant windshear. This involves the calculation of a V_{RMAX} defined as the lowest of the maximum V_R for the maximum allowable weight for the prevailing runway and weather conditions and the V_R for the actual weight plus 20 knots. The “*rotate*” call is then made at V_{RMAX} unless windshear is encountered at or beyond the normal V_R or before reaching V_{RMAX} in which case rotation should commence immediately.

The other variation is at what point the PM speed call - the boundary between a low or high speed rejected takeoff - is made. After this call, restrictions on when a takeoff should be rejected are given. This speed is either 80 knots (Boeing, also adopted by other manufacturers) or 100 knots (Airbus), although operators with both Airbus and Boeing types may standardise on the lower speed. In either case, but especially if 100 knots is used, a lightly loaded or non-revenue positioning flight will accelerate much faster than if fully loaded even using reduced thrust, leaving little time to initiate a reject if the call is not made because it has not been reached on the PM ASI.

Finally, if use of the wrong performance data results in the TODA being less than is actually required, this may lead to a decision to continue the takeoff if the distance remaining is assessed as being insufficient to safely stop. However, if the consequences of a high speed overrun are assessed as worse than continuing, maximum thrust must immediately be set if a reduced thrust was initially used.

Safety Recommendations

To Aircraft Operators

- RTO policies, procedures and required task sharing between the PF and the PM must be clear especially the form of a required ‘STOP’/‘REJECT’ call and the circumstances when it should be made. Which pilot(s) can make the call and who must stop the aircraft must be clearly documented.
- Action if a manual or automated 80/100 knot speed call is not heard by the PF or not made correctly because the V speeds were not set or the PM air speed is under-reading must be clearly stated.
- Rejecting a takeoff after V_R without autobrake set must emphasise gentle de-rotation.
- Engineering action after any high speed rejected takeoff should require a full inspection of the landing gear assemblies not just the tyres, especially in respect of the nose landing gear.

To Pilots

- Ensure that a pre-flight brief at some convenient point prior to or after boarding the aircraft for the first departure of a crew pairing in a duty period reiterates the circumstances in which a high speed rejected takeoff might be necessary and the response which is required.
- Ensure all critical data input, especially on a paperless flight deck, is independently cross checked.
- High speed rejected takeoffs should be recorded in the aircraft Technical Log to ensure an engineering assessment of potential consequences resolves any findings before release to service.
- Since some States’ ATC units have to report all RTOs to their regulator, it may be worth raising a safety report with the operator, the regulator or your union to cover any potential further inquiries.
- Avoid having to continue takeoff because there is not enough runway distance ahead to safely stop by ensuring that performance data has been independently cross-checked. Be aware that unlikely as it may seem, two pilots can make the same error despite performing independent calculations.
- A prompt low speed rejected take off with immediate idle thrust selection and maximum braking may be necessary to avoid a veer-off if asymmetric thrust/power occurs after takeoff thrust is set or nosewheel steering fails to respond when a required nosewheel steering input to control direction is attempted.

⁶ https://jtsb.mlit.go.jp/eng-air_report/JA11FJ.pdf

⁷ https://assets.publishing.service.gov.uk/media/681b144c386c17c856f17359/Boeing_777-236_G-VIIT_05-25.pdf