



Australian Government

Australian Transport Safety Bureau

Incorrect configuration for landing involving Boeing 737- 376SF, VH-XMO

near Sydney Airport, New South Wales, on 27 January 2021

ATSB Transport Safety Report

Aviation Occurrence Investigation (Short)

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Discontinuation notice – 5 May 2023

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Addendum

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Discontinuation notice

Section 21 (2) of the *Transport Safety Investigation Act 2003* (TSI Act) empowers the ATSB to discontinue an investigation into a transport safety matter at any time. Section 21 (3) of the TSI Act requires the ATSB to publish a statement setting out the reasons for discontinuing an investigation. The statement is published as a report in accordance with section 25 of the TSI Act, capturing information from the investigation up to the time of discontinuance.

Overview of the investigation

On 29 January 2021, the ATSB commenced an investigation into an incorrect configuration involving a Boeing 737-300 SF aircraft, registered VH-XMO, which occurred during final approach at Sydney Airport, New South Wales, on 27 January 2021. During the approach, the crew received a 'TOO LOW GEAR' warning from the aircraft's ground proximity warning system (GPWS). The crew immediately conducted a go-around and conducted a second approach, landing without further incident.

The aircraft was being operated by Express Freighters Australia on a scheduled freight flight at night from Melbourne, Victoria, to Sydney. The captain was the pilot flying and the first officer was the pilot monitoring.

Air traffic control (ATC) cancelled speed restrictions and requested the crew conduct the RIVET THREE standard instrument arrival (STAR) to runway 16R. While the crew were conducting the STAR, ATC commenced providing vectoring to the crew, which had the effect of track shortening the approach and the aircraft intercepted the approach track between the initial and final approach fixes on the runway 16R instrument landing system approach. The vectoring also meant the aircraft intercepted the final approach track at a lower altitude than normally expected for the STAR. Combined with the speed intervention, the vectoring compressed the time, altitude, and track distance available for the crew to configure the aircraft for landing.

The crew attempted to program waypoints into the aircraft flight management computer after receiving the vectoring instructions from ATC. The first officer incorrectly programmed one of these waypoints, and this required multiple attempts to correct. The captain also became confused about an autopilot mode change. These concerns and distractions were resolved by the crew, however the captain later reflected that this may have affected their ability to 'stay ahead of the aircraft'.

Conditions during the approach included scattered cloud and rain, and the crew planned to conduct the approach using low visibility procedures. This required the captain to transition their attention during the approach to primarily outside the aircraft, and to make 'environmental callouts' about the observed conditions. The first officer perceived the captain made many comments about the conditions.

The crew had planned to conduct the approach to land at Sydney using noise abatement procedures. These procedures required the crew extend the landing gear at 2,000 ft, then extend flaps and reduce the airspeed before completing the landing checklist. Operating procedures also required the crew to configure the aircraft for landing prior to 1,000 ft in instrument meteorological conditions (which were applicable on the occurrence flight).

Both pilots recalled that it was typical to extend the landing gear at about 2,500 ft, after which they would then conduct other steps to configure the aircraft. The captain recalled that they decided not to extend landing gear at 2,500 ft because they were conscious of not slowing down an aircraft behind them. The instructions provided by ATC had also indicated to the captain it was preferable to maintain speed during the approach.

As the aircraft continued to descend, the crew did not extend the landing gear, set flap extension beyond flaps 5, or reduce the selected airspeed. Additionally, the crew did not complete the landing checklist. The airspeed remained at 180 kt throughout the approach, which was significantly greater than intended.

As part of the investigation, the ATSB:

- interviewed the flight crew
- analysed data from the aircraft's flight data recorder and quick access recorder
- reviewed recorded air traffic control audio and surveillance data
- reviewed information provided by the aircraft operator, including operational procedures.

During the investigation, the ATSB identified that:

- The captain did not use their normal height-related cue for extending the landing gear at 2,500 ft. As a result, the captain had to remember to extend the landing gear at a stage in the approach they would normally not expect to do so.
- Neither pilot detected that the airspeed was significantly greater than intended. This indicated that the pilots were experiencing a high workload and either not scanning their instruments effectively and/or had reduced awareness of the aircraft's position along the approach. The investigation did not determine the exact reason neither pilot identified the excessive airspeed.
- The crew had strong habits for completing steps during an approach in a sequential fashion after extending the landing gear. The pilots' normal cue for extending the landing flaps and reducing the airspeed was extending the landing gear. In turn, the subsequent steps in the procedures were normally the trigger for calling for the landing checklist. Because of these sequential cues, the crew's omission of selecting landing gear created a condition where they were much more likely to forget to conduct the landing checklist.
- When the aircraft descended through 500 ft, the GPWS generated a 'TOO LOW GEAR' alert. The system worked as designed and the crew immediately executed the missed approach/go-around. The quick decision to conduct a go-around and the correct execution of this procedure reduced the likelihood of any accident.

Reasons for the discontinuation

Based on a review of the available evidence, the ATSB considered it was unlikely that further investigation would identify any systemic safety issues or important safety lessons. Consequently, the ATSB has discontinued this investigation.

The evidence collected during this investigation remains available to be used in future investigations or safety studies. The ATSB will also monitor for any similar occurrences that may indicate a need to undertake a further safety investigation.