

# CALLBACK

From NASA's Aviation Safety Reporting System



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## Loss of Aircraft Control

Perhaps the most basic and crucial skill in all of aviation is the ability to maintain aircraft control. Under normal circumstances, a pilot establishes and maintains aircraft control through the constant correction of aircraft attitude and available power to achieve desired performance. When an event occurs that causes an aircraft, even temporarily, to deviate beyond acceptable tolerances, or hinder, prevent, or exceed the pilot's or aircraft's ability to perform as the pilot desires, control has been lost. Consequences can vary, depending on event severity and the pilot's ability to recover.

Loss of aircraft control can be triggered by many factors, which may be broadly classified as weather or environmental conditions, system malfunctions, or Human Factors. Pilots at all levels of qualification, skill, and experience have lost aircraft control.

Our offering this month is a study on the loss of aircraft control. Flight conditions, operations, and individual circumstances all vary, but valuable lessons are present.

### Blackhawk Down

A system malfunction, while negotiating incompatible weather, put this Blackhawk helicopter and pilot in jeopardy.

■ *The [helicopter] departed originally [under] VFR.... TRACON was able to give IFR clearance. The [helicopter] was level at 5,000 feet. Upon entrance into the sector, they encountered icing conditions. The [helicopter] was [issued a] climb to 8,000 feet and got out of the icing. Enroute to the original destination, the pilot asked for a diversion...due to fuel. I cleared and gave the [helicopter] pilot's discretion clearance to 5,000 feet. That put it back into icing conditions, at which [time] the icing equipment malfunctioned. The pilot asked for a descent out of the icing conditions. I issued a descent to 4,900 feet, which was the lowest Minimum IFR Altitude (MIA). The pilot took the descent but continued to descend. The pilot was not able to maintain altitude and continued descending. We were looking for a safe place for the helicopter to land. Also, I wanted to keep it out of the clouds due to icing. The [pilot] requested priority handling. I tried to assist the best way I could, [given] the conditions. The pilot reported being in moderate to heavy icing conditions and was unable to maintain altitude.*

### A Student Nightmare

This instrument student experienced a system failure that quickly threatened control of the aircraft. The instructor took swift action to recover the aircraft and mitigate the threat.

■ *During the takeoff and initial climb of an IFR training flight, the aircraft began uncommanded pitch-up and pitch-down movements, then began pitching up. The instrument student attempted to control this by using the electric trim controls on the left side of the control yoke but was unsuccessful. Several seconds later, the red PITCH TRIM FAIL indicator light illuminated, and the aural beep commenced. The aircraft began another uncommanded pitch-up, at which point the instructor took control of the aircraft, reduced thrust substantially, regained level flight, and cycled the Master Switch on and off to attempt to either reset or disable the electric pitch trim. After that, the electric pitch trim became inoperative. Manual trim inputs were effected to stabilize the aircraft.*

*The instructor requested priority handling with Approach and requested clearance to return and land at [the departure airport], which was then slightly behind the aircraft. Aircraft control was regained, and the electric pitch trim was inoperative, but because of the aforementioned runaway trim, the manual pitch was positioned for a nose-high attitude and was difficult to manipulate. Thrust inputs and flaps were primarily used to stabilize the aircraft's descent with minimal trim inputs for fear of setting off further uncommanded pitch trim changes.*

*The instructor was able to land the aircraft on the runway... without incident or requiring any assistance. The aircraft was taxied to the ramp and parked.*

### Missing the Mark

Expecting to be repositioned, this A319 Captain released the brakes and received a surprise. Fortunately, the ride was smooth, as was the stop, but a good lesson was reiterated.

■ *During aircraft [block-in] at a fixed jetway, the aircraft was determined to be approximately 8 to 12 inches too far forward of the parking mark. The ground crew established verbal contact and coordinated with the cockpit crew to push the aircraft back to the correct spot. After the initial*

attempt to set the aircraft on the mark, the ground crew communicated that they would have to attempt the movement again and proceeded to tell the Captain to release the brakes. When I released the brakes, the aircraft began moving backwards, and after about 1.5 feet, the ground crew said, "Ground to cockpit, set brakes."

Then the ground crew advised us that we would have to release the brakes so that he could pull us forward. At this point, I asked the ground crew if we had been attached to the tug when he had previously instructed us to release the brakes. He informed us that we were not, in fact, attached, so we therefore had experienced an uncommanded movement of the aircraft. At this point, the final attempt to bring the aircraft to the parking mark was only undertaken after I specifically inquired...whether the aircraft was secured to the tractor.

## A Devilish Takeoff

During takeoff, this B737 pilot saw what was thought to be birds at the far end of the runway. As they approached the departure end, the threat took on another form.

■ On takeoff roll above 100 knots, I noticed what I thought was a flock of small white birds on the departure end of the runway. After VR and the "Rotate" call, I realized, in the rotation, that it was not birds, but a dust devil, a tornado type rotation of trash and papers. It was quite large, just left of centerline,...covering most of the runway width, and spanning well above our altitude. The winds seemed to be quite intense, judging by the speed of the trash whirling around.

As the airplane began to lift off, I noticed a vibration on the airplane, possibly a buffet, and the airplane did not seem to be climbing as expected. I began to reach for the thrust levers but was forced back to the yoke when we hit the dust devil and the airplane aggressively rolled to the left. The Captain and I both applied aggressive roll input in the opposite direction. The aircraft was slow to respond but eventually did and returned to level flight.

I did not have time to look at the instruments and notate the roll angle or airspeed loss, but there were no...alerts from the aircraft. Once through the dust devil, the aircraft climbed normally, and the rest of the flight was uneventful.

## Control Hangs in the Balance

Unknown to the crew, weight and balance errors were instrumental in causing this B767 First Officer to struggle for aircraft control during departure.

■ ...Upon arrival at the aircraft the crew noted that [the aircraft] had already been loaded with the main deck and lower belly doors opened. The weather had changed to

active precipitation before block-out, with Low Level Wind Shear (LLWS) advisories in effect and a reported 20 knot loss [of airspeed] on final and the approach end of the runway. The crew re-ran the numbers for an optimized takeoff with max thrust calculations. It gave us flaps 15 takeoff for a weight of 271,985 lbs. The takeoff weight [center of gravity]...was 22.25% with a trim [setting] of 2.5. [Shortly after] takeoff at about 3,000 feet, we noticed the speed began to rapidly bleed off. We then disconnected the autopilot and autothrottles, applied max thrust available, and lowered the nose in an attempt to increase airspeed and stabilize. During the maneuver, the First Officer had to fight the aircraft in order to bring the nose down. We recovered at about 3,000 feet and 118 knots. We hand flew to 5,000 feet, which was the ATC assigned level-off, before re-engaging the automation. We then continued the flight without any further incidents... Upon arrival at destination,...the load supervisor noticed the cans had been loaded incorrectly, and the non-specific freight had not been accounted for properly. The [load supervisor] then re-weighed all the cargo aboard and noticed the weights on some of the loading sheets were incorrect. The weight and balance that the crew had received did not match the final paperwork that [the destination] station had received from [the departure station]. After receiving all of the information, we proceeded to contact [management] to inform them of the situation and the errors discovery.

## Tornado Alley

While this Cessna 402 Captain was dangerously positioned at low altitude, the aircraft was swept out of control.

■ ...On the visual to [Runway] 4L, I was 4 miles behind a heavy Airbus A340 on final for [Runway] 4R. At 300 feet, [my] airplane rocked and bounced wildly and...went into a right roll. I was able to recover the roll at what I can only estimate to be about 90 degrees. People were bounced out of their seats and pinned against the right side of the airplane. I struggled to control the airplane, applying full left aileron and rudder to attempt to correct the roll. Finally, I was able to straighten the aircraft. I executed a go-around at full power. We came back...to land on [Runway] 4L without incident. I asked the passengers...in the air when we got leveled out and...[again] on the ground if anyone needed...assistance. The only passenger that spoke up was a female who had previously had back surgery. She stated that her back hurt and that she would need to take her pain medicine.... She also asked for a wheelchair, which I already had planeside for her. Wake turbulence from the heavy Airbus, plus a 15-knot crosswind, blew the [vortices] right into my aircraft,...causing it to become uncontrollable.

| ASRS Alerts Issued in December 2020 |               |
|-------------------------------------|---------------|
| Subject of Alert                    | No. of Alerts |
| Aircraft or Aircraft Equipment      | 2             |
| Airport Facility or Procedure       | 4             |
| ATC Equipment or Procedure          | 1             |
| <b>TOTAL</b>                        | <b>7</b>      |

493  
A Monthly Safety  
Newsletter from  
The NASA  
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| December 2020 Report Intake |              |
|-----------------------------|--------------|
| Air Carrier/Air Taxi Pilots | 3,500        |
| General Aviation Pilots     | 1,145        |
| Flight Attendants           | 412          |
| Military/Other              | 247          |
| Controllers                 | 216          |
| Mechanics                   | 162          |
| Dispatchers                 | 123          |
| UAS                         | 1            |
| <b>TOTAL</b>                | <b>5,806</b> |