

Serious Incident

Aircraft Type and Registration:	Cessna Citation CJ2+, D-ISCV	
No & Type of Engines:	2 Williams FJ44-3A-24 turbofan engines	
Year of Manufacture:	2009	
Date & Time (UTC):	6 January 2026 at 0910 hrs	
Location:	London Biggin Hill Airport	
Type of Flight:	Commercial Air Transport (Passenger)	
Persons on Board:	Crew - 2	Passengers - None
Injuries:	Crew - None	Passengers - N/A
Nature of Damage:	None	
Commander's Licence:	Commercial Pilot's Licence	
Commander's Age:	50 years	
Commander's Flying Experience:	10,500 hours (of which 4,000 were on type) Last 90 days - 41 hours Last 28 days - 9 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

D-ISCV was de-iced before departure. On rotation during the takeoff the pilot experienced what he thought was a control issue, with the aircraft not responding to aft pressure on the control column. A rejected takeoff (RTO) was performed during which the aircraft departed the runway at low speed. No mechanical reason was found to explain the perceived control issue. The aircraft manufacturer states in the aircraft's flight manual that heavier than normal elevator control forces might be experienced after de-icing, and this may have led to the perception that the aircraft was not responding to control inputs. During the RTO the pilot reported that he needed to apply heavy braking, but this may have been applied differentially, resulting in the aircraft departing the runway to the right.

History of the flight

The aircraft had been parked at Biggin Hill Airport for three days prior to the flight. The two pilots travelled to Biggin Hill two days before the flight to start their 14 days of duty. The pilots visited the aircraft the day before the incident flight and topped up the engine oil. On the day of the incident the aircraft was required to be positioned with just the two pilots onboard to Geneva, Switzerland, and departure was planned for 0800 hrs. The crew asked for the aircraft to be de-iced prior to the flight and stated subsequently that the aircraft only needed de-icing and not anti-icing due to the ambient conditions. The temperature dropped to -5°C the previous evening and the morning was clear and cold with no precipitation. De-icing was started at 0833 hrs using Type 2 fluid with a 75% fluid and 25% water mix,

applied at a temperature of 60°C. This was completed at 0842 hrs and the commander performed a tactile test on the wing to ensure that any ice present had melted. It was noticed at the time by the pilots that the fluid had not “steamed” as much as normal when applied to the wing. The de-icing worksheet indicated that 84 l of fluid was applied with a holdover time¹ of five hours. The temperature at the time of applying the fluid was noted as -3.6°C, and there was no precipitation.

The flight time to Geneva was planned to be 1 hour 14 minutes and the aircraft had a fuel endurance of 2 hours 35 minutes. The co-pilot was in the right seat and conducting the flight as pilot flying and the commander under training, as part of their command line training. The commander was in the left seat and was a qualified company line trainer. After start, the crew “[paid] particular attention to the correct operation of the flight control surfaces following the de-icing procedure”, and at 0905 hrs the aircraft taxied for departure from Runway 21.

At 0910 hrs the aircraft commenced its takeoff, which was reported by both pilots to be initially normal. At V_R of 102 kt the pilot flying (PF) applied back pressure on the control column to rotate, but he reported subsequently that the aircraft did not respond to this input. Further aft pressure was applied but there was still no response from the aircraft and the pilot called “abort, abort”. The pilots reported that the takeoff was rejected at 110 kt around the midpoint of the runway. This aircraft type has differential braking on the main landing gear, which is applied by pressing on the top part of the rudder pedals, and the pilot flying reported that they had to apply higher than normal brake pedal pressure to stop the aircraft within the remaining runway available. At around 30 kt “the aircraft began to slide to the right of the runway” and it then ran onto the grass. The aircraft came to a stop about 15 m from the runway edge on the grass. The crew secured the aircraft and exited via the normal doors. The aircraft was subsequently recovered from its position to a maintenance hangar at the airport.

De-icing procedure

The de-icing service at Biggin Hill is provided by the handling agent. The fluid used for the procedure was Killfrost ABV K Plus Type 2, which was delivered premixed to a ratio of 75% fluid to 25% water. Type 2 de-icing fluid is designed to provide both de-icing and anti-icing capability. The fluid is viscous and remains attached to the aircraft surfaces during takeoff, until a speed of around 100 kt is reached after which its viscosity breaks down and it is shed from aircraft surfaces. A daily check of the fluid is performed every morning prior to the first application of the day. Before application, the operator checks for a green light on the machine, which indicates that the fluid is at the correct temperature for application; a red light illuminates if this is not the case.

The batch of fluid that was applied to D-ISCV had been applied to 19 aircraft in the proceeding three days, and a sample of the fluid had been sent to the manufacturer for routine testing two days before the incident, with no issues detected in the fluid. On completion of the

Footnote

¹ Holdover time is the estimated period after the application of de-/anti-icing fluid during which the fluid is expected to prevent the formation or accumulation of ice, frost or snow on the protected surfaces.

procedure the commander signed the worksheet, confirming that the de-icing had been performed to his satisfaction.

Aircraft information

D-ISCV is a Cessna Citation CJ2+ aircraft, with a seating capacity of six passengers and two flight crew. It is approved for single pilot operations but is operated as a multicrew aircraft by the operator. The Citation CJ2+ is approved for operations in known icing conditions and is fitted with pneumatic de-icing boots on the leading edges of the wings and tail. Bleed air from the Williams FJ44 full FADEC engines is used for engine ice protection and windshield de-icing. Section VII of the aircraft flight manual contains the ground de-ice/anti-ice procedures. The manual states that takeoff performance is degraded when anti-ice fluid is applied to the aircraft. Takeoff is limited to flaps UP when Type 2 fluid is applied to the aircraft, in which case the takeoff field length must be increased by a factor of 1.3. The manual cautions that heavier than normal elevator forces may be experienced during rotation and the aircraft may be slower than normal to rotate; forces will return to normal shortly after rotation.

Aircraft examination

The aircraft was reported by the pilots to have more de-icing fluid remaining on its wings than they would have expected, given the high speed at which the rejected takeoff was initiated (Figure 1).



Figure 1

De-icing fluid remaining on wing after rejected takeoff

On the subsequent maintenance examination there were no mechanical issues found with either the flight controls or the engines. Nothing was found that might have led to the inability of the pilot to increase the pitch of the aircraft on takeoff. It was noted that the right engine oil filler cap had not been fitted and was hanging on its chain to the side of the engine. However, there was no evidence of oil splatter inside the engine cowls, so it was suspected that this was only left off before this flight. This would not have had any significant impact on the control issue reported by the pilot on the incident flight.

Weight and balance

The aircraft had a crew of two pilots at the time of the incident with no passengers. A fuel load of 2,900 lb (1,315 kg) gave a takeoff mass of 11,255 lb (5,105 kg), and the maximum takeoff mass of the aircraft was 12,500 lb (5,669 kg). The aircraft was loaded within balance limits published by the manufacturer.

Meteorology

On the morning of the incident the weather was cold with a clear sky, and the temperature the night before the accident had fallen to -5°C. The runway was reported as being wet and had been chemically treated. The surface wind was reported as being from 240° at 7 kt and the temperature was -4°C. Just before the aircraft was cleared for takeoff the runway had been inspected but the runway surface conditions had not changed, so this was not reported to the pilot again.

Aerodrome information

London Biggin Hill (EGKB) is an airport to the south-east of London which serves both general aviation and business aviation. It has a single hard runway. The runway in use at the time of the incident was Runway 21 with a TODA of 5,919 ft.

Analysis

The aircraft had been left outside overnight in temperatures below freezing and the crew elected to de-ice the aircraft prior to departure. During the application process the crew noted that the fluid did not appear to steam as much as they had seen before, which might have suggested a lower temperature of fluid application. This appeared unlikely, however, because the checks performed by the operator and the design of the application equipment ensure that the application of fluid at a lower temperature is avoided. The pilots performed a tactile check following the procedure and were content that the aircraft was de-iced sufficiently.

The initial acceleration of the aircraft was reported as being normal and it was only when the pilot flying tried to rotate that he thought he had a problem because, when he pulled back on the control column, he felt no response from the aircraft. The crew had checked after start that the flight controls operated correctly, and subsequent checks on the aircraft did not find any mechanical issues with the controls or engines that would have caused such a lack of response from the aircraft. The manufacturer cautioned that following de-icing heavier than normal elevator forces may be experienced, and this may have contributed

to the impression that the aircraft was not responding to normal inputs. The pilot reported that once the decision to reject the takeoff was made they needed to apply heavy braking to try to stop the aircraft within the remaining runway length available. This application of braking might have been applied with slightly different pressure on the differential brakes, and increased braking on the right brake may have contributed to the aircraft departing the runway to the right onto the grass. It was reported by the pilots that a considerable amount of de-icing fluid was still on the surfaces of the aircraft following the RTO but there was no evidence that this was excessive. The fluid had been applied in accordance with the manufacturer's recommendations and had been checked by the manufacturer two days before the incident.

Conclusion

The aircraft was de-iced prior to takeoff. During takeoff the pilot experienced what he thought was a control issue and so the takeoff was rejected. No mechanical issue was identified that could have contributed to a control issue. However, manufacturer guidance cautioned that heavier control forces should be anticipated following de-icing and the pilot may have experienced this on rotation and interpreted it as a control problem.

During the RTO, the aircraft departed the runway onto the grass. It is possible that this occurred because asymmetric pressure was applied to the brake pedals.