

ACCIDENT

Aircraft Type and Registration:	Cessna Citation Mustang, PH-TXI	
No & Type of Engines:	2 Pratt & Whitney PW615F turbofan engines	
Year of Manufacture:	2007	
Date & Time (UTC):	21 August 2009 at 1430 hrs	
Location:	Runway 23 at Cambridge Airport	
Type of Flight:	Training	
Persons on Board:	Crew - 2	Passengers - 2
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Scratches to underside of aircraft, damage to drain masts and antenna, detached flap inboard hinges (both sides) and right flap centre hinge	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	45 years	
Commander's Flying Experience:	9,461 hours (of which 132 were on type) Last 90 days - 26 hours Last 28 days - 5 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and further enquiries by the AAIB	

Synopsis

The landing gear was not lowered on the downwind leg. The co-pilot flared for touchdown and there was a "grinding" sound from the rear of the aircraft. The commander took control and went around. The aircraft landed subsequently without further incident. The landing gear warning horn had been triggered on the downwind leg and had been cancelled by the commander. The co-pilot remembered hearing the landing gear warning horn again briefly during the final approach. The commander, however, believed that the warning system had not reset and there had been no further warning. It was not possible to determine with any certainty whether or not the warning system had reset.

History of the flight

The aircraft was on the downwind leg in a clean configuration prior to an approach to Runway 23 at Cambridge Airport. The approach was to be flown by the co-pilot with the flaps selected to TAKEOFF/APPROACH instead of to LANDING. The weather was wind from 220°/12 kt, more than 10 km visibility, few clouds at 4,000 ft amsl and a temperature of 18°C. The co-pilot reduced power to slow the aircraft and, as it decelerated through 130 kt, the landing gear aural warning was triggered because the thrust was below approximately 85% N₂ and the landing gear was selected UP. The commander cancelled the warning immediately after it sounded. The co-pilot asked for the approach checklist

to be carried out by the commander who did so by memory rather than by using the usual ‘challenge and response’ technique. This particular checklist does not call for the landing gear to be selected down. The landing gear was not selected DOWN on the downwind leg.

On the final approach the co-pilot had difficulty reducing speed towards V_{REF} but thought it was because the reduced flap setting was causing less drag than normal. He stated later that the landing gear aural warning was triggered during the final approach and was cancelled immediately although this differed from the commander’s account. The landing checklist was also completed by the commander from memory rather than by ‘challenge and response’.

During the flare, the co-pilot heard a “grinding” sound from the rear of the aircraft. He applied some power and raised the aircraft nose sufficiently to remain airborne. The commander took control and lowered the landing gear while maintaining approximately 95 kt and flying along the runway at an estimated height of 10 ft. He realised that the runway length remaining was insufficient to land and so applied takeoff power to go around. The aircraft configuration was left unchanged with landing gear selected DOWN and flaps selected to TAKEOFF/APPROACH. The commander positioned for a visual inspection by the controller in the ATC tower and then flew another circuit and landed without further incident.

Witness information

A witness was in a room in an airport building with a clear view of the touchdown point. He saw the aircraft flare and noticed that the landing gear was still retracted. The aircraft tail appeared to contact the runway and he saw a “puff of white smoke” and heard the airport crash

alarm. He saw the aircraft get airborne again and the landing gear extend.

Engineering inspection

Following the incident, an inspection of the aircraft was carried out to determine the serviceability of the landing gear warning system. The landing gear was found to be serviceable but the flaps were stuck in the TAKEOFF/APPROACH position. The landing gear warning system operated correctly in the achievable configurations.

Landing gear warning system

The landing gear aural warning is triggered when the IAS falls below 130 kt if one or more of the landing gear are not locked down and one or both thrust levers are retarded below approximately 85% N_2 . Pressing the HORN SILENCE - PUSH button on the landing gear control panel silences the warning but does not reset the system. The system resets when the thrust levers are advanced above approximately 70% N_2 .

Assessment of cause

The landing gear was not selected down while the aircraft was on the downwind leg. The landing checklist was not completed in the usual ‘challenge and response’ manner which meant opportunities were lost to highlight the omission.

The commander stated later that he had expected to hear the landing gear warning horn and had cancelled it immediately when it was triggered on the downwind leg. He could not say why the checklists were not completed properly. The landing gear warning system would have reset had the power increased above approximately 70% N_2 . With the landing gear UP and the flaps selected to TAKEOFF/APPROACH, however, the drag and power required during the approach were lower than normal.

The commander believed the landing gear warning system had not reset which meant that there was no final warning prior to touchdown that the landing gear was not locked down.

The co-pilot remembered the landing gear warning horn sounding on final approach and, if his recollection was correct, the warning system reset at some point during

the circuit. If this was the case, the warning horn was triggered and cancelled at a critical point in the approach and its meaning was not appreciated by the crew.

It was not possible to determine with any certainty whether or not the system had reset prior to the final approach.