

AIRCRAFT ACCIDENT REPORT No 3/2010

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REPORT ON THE ACCIDENT TO CESSNA CITATION 500, VP-BGE 2NM NNE OF BIGGIN HILL AIRPORT 30 MARCH 2008

Operator:	Private flight
Aircraft Type and Model:	Cessna Citation 500
Registration:	VP-BGE
Location:	2 nm NNE of Biggin Hill Airport
Date and Time:	30 March 2008 1336 hrs All times in this report are UTC

Synopsis

Biggin Hill Airport notified the Air Accidents Investigation Branch (AAIB) of the accident on 30 March 2008 and the investigation began the same day. The following inspectors participated in the investigation:

Mr K Conradi	Investigator-in-Charge
Mr M Cook	Operations
Mr N Dann	Operations
Mr M Jarvis	Engineering
Mr A Burrows	Flight Recorders

The aircraft departed Biggin Hill for a private flight to Pau, France but shortly after takeoff initiated a return to Biggin Hill after reporting engine vibration. During the downwind leg for Runway 21, the aircraft descended. The flightcrew reported a major power problem just before it struck the side of a house. An intense fire developed. None of the two flight crew and three passengers survived.

The following contributory factors were identified:

1. It is probable that a mechanical failure within the air cycle machine caused the vibration which led to the crew attempting to return to the departure airfield.
2. A missing rivet head on the left engine fuel shut-off lever may have led to an inadvertent shutdown of that engine.
3. Approximately 70 seconds prior to impact, neither engine was producing any thrust.
4. A relight attempt on the second engine was probably started before the relit first engine had reached idle speed, resulting in insufficient time for enough thrust to be developed to arrest the aircraft's rate of descent before ground impact.

Three Safety Recommendations have been made.

Findings

1. Both the pilot and co-pilot were properly licensed and qualified to operate the aircraft for single pilot operation only.
2. The aircraft was certified, equipped and maintained in accordance with the regulations and approved procedures.
3. There is no specific routine inspection of the condition of the fuel cut-off levers or their attachment to the engine throttles.
4. There was no evidence of adverse wear in the flight controls and all the aircraft compartment and cabin doors were correctly secured and locked.
5. No pre-impact defects or distress were observed to either engine starter/ generator.
6. The rivet head securing the left engine fuel cut-off lever had become detached at some time prior to impact.
7. There was no evidence that either engine would not have been able to respond to flight crew control inputs.
8. There was no evidence of any pre-impact defects or distress in the rotating assemblies of either engine, nor was there any evidence of compressor stalling or surging.
9. The aircraft was structurally complete at the time of impact, the flaps were at, or close to, the take off/approach setting and the landing gear was retracted.
10. The engine cowlings were in place at the point of impact.
11. The rudder trim was found in the full nose-right position.
12. The damage observed on the fan blades of the left engine was consistent with the initial impact of the aircraft with the house.
13. Performance calculations suggest that approximately 70 seconds prior to impact neither engine was producing any thrust.
14. Both engines were operating when the aircraft struck the house.
15. A single engine relight could have produced sufficient thrust in the time available to prevent ground impact.
16. Both engines were relit prior to impact but with insufficient time to prevent ground impact.
17. The accident was not survivable.
18. The air cycle machine bearing distress is the most probable cause of the vibration described by the pilots as "ENGINE VIBRATION".
19. Having neither a flight data recorder nor a cockpit voice recorder installed on the aircraft meant that information critical to identifying the cause of the accident was not available to the investigation.

Safety Recommendations

The following Safety Recommendations have been made:

Safety Recommendation 2010-014

It is recommended that the Federal Aviation Administration require that Cessna Aircraft Inc

introduce a scheduled inspection of the Cessna Citation 1 throttle quadrant assembly to ensure the integrity of the riveted joints securing the fuel shut-off levers to the throttle levers.

Safety Recommendation 2010-015

It is recommended that the Federal Aviation Administration require Cessna Aircraft Inc to amend the 'EMERGENCY RESTART –TWO ENGINE' checklist to emphasise the significance of only restarting one engine at a time.

Safety Recommendation 2010-016

It is recommended that the International Civil Aviation Organisation adopt the proposals of its Flight Recorder Panel for the requirement to install flight recorders on turbine-engine powered aeroplanes of a maximum certified takeoff mass of 5,700 kg or less.