# Aviation Safety Investigation Report 199904135

## Cessna Aircraft Company Citation II

## 29 August 1999

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**NOTE: All air safety occurrences reported to the ATSB are categorised and recorded. For a detailed explanation on Category definitions please refer to the ATSB website at www.atsb.gov.au.**

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**Occurrence Number:** 199904135 **Occurrence Type:** Incident
**Location:** Cooma, Aerodrome
**State:** NSW **Inv Category:** 4
**Date:** Sunday 29 August 1999
**Time:** 2123 hours **Time Zone** EST
**Highest Injury Level:** None

**Aircraft Manufacturer:** Cessna Aircraft Company
**Aircraft Model:** 550
**Aircraft Registration:** VH-XDD **Serial Number:** 5500076
**Type of Operation:** Miscellaneous Other
**Damage to Aircraft:** Minor
**Departure Point:** Cooma NSW
**Departure Time:**
**Destination:** Sydney NSW

**Approved for Release:** Thursday, November 18, 1999

The aircraft was on the takeoff roll, commencing rotation at approximately 113 knots indicated airspeed when the crew noted a flight of possibly three ducks off the left-hand wing. Shortly after the crew reported that the number one engine suddenly experienced a destructive failure and shutdown with no cockpit indication. The crew continued the takeoff and retracted the main landing gear. They reported that the gear cycled very slowly and that they were apprehensive about a possible bird strike to the gear as well as the engine. Because of this concern they then proceeded to a diversion airport where emergency services were available. Enroute they reported no problems in continuing the flight on one engine. At the diversion airport they extended the main landing gear and proceeded to land without further incident.

During post occurrence examination, outward penetration shrapnel damage was evident on the low-pressure compressor case which indicated an uncontained failure of the case. The damage appeared to be the result of the shedding of portions of the low-pressure compressor fan blades. Additionally, secondary damage caused by shrapnel penetration of the low-pressure compressor case resulted in several areas of outward denting of the number one engine cowl. The number one engine cowling contained the penetration. There was no significant damage to the fuselage of the aircraft.

The JT-15D-4 incorporates an emergency shutoff feature which prevents possible low-pressure turbine overspeed in the event of a low-pressure turbine decouple. Metered fuel to the fuel manifolds is automatically cut off to prevent possible overspeed of the low-pressure turbine assembly. It appears that in this occurrence, the axial displacement of the low-pressure compressor fan during the bird ingestion event had activated the emergency shut off feature.

A bird feather recovered internally from the damaged aircraft number one engine was sent for examination. An ornithologist reported that analysis of the feather indicated the feather was that of an Australian Wood Duck, with an average full-grown weight of 800 to 815 grams.

Confirmation of the exact number of birds ingested into the engine during the occurrence could not be confirmed, therefore, compliance to published foreign objects ingestion requirements could not be conclusively established.