

**Aviation Safety Investigation Report  
199403066**

**Cessna Aircraft Company  
Conquest**

**23 October 1994**

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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](http://www.atsb.gov.au).**

**Occurrence Number:** 199403066                      **Occurrence Type:** Accident  
**Location:** Perth Airport  
**State:** WA    **Inv Category:** 4  
**Date:** Sunday 23 October 1994  
**Time:** 0922 hours                                      **Time Zone** WST  
**Highest Injury Level:** None

**Aircraft Manufacturer:** Cessna Aircraft Company  
**Aircraft Model:** 441  
**Aircraft Registration:** VH-LBY                      **Serial Number:** 4410023  
**Type of Operation:** Charter                      Passenger  
**Damage to Aircraft:** Substantial  
**Departure Point:** Perth WA  
**Departure Time:** 0712 WST  
**Destination:** Yandicoogina WA

**Crew Details:**

Role	Class of Licence	Hours on	
		Type	Hours Total
Pilot-In-Command	ATPL 1st Class	2500.0	6300

**Approved for Release:** Thursday, December 15, 1994

Shortly after the pilot retracted the landing gear, on departure from Perth, he observed a light flash on the Master Warning Panel. The pilot decided to check the landing gear system before proceeding further. As he lowered the landing gear both hydraulic LOW FLOW lights came on. The left main gear, only, locked down. The pilot decided to leave the gear selected down and refer to the emergencies section of the aircraft manual before proceeding further.

An emergency was declared and the aircraft returned to Perth. The pilot activated the emergency gear lowering system and obtained a down indication on the right and left main landing gears but not the nose gear. The emergency system is a single shot nitrogen gas system operating through the normal hydraulic lines.

An air and ground inspection confirmed that the nosewheel was trailing behind the normal locked position. The aircraft was held for approximately two hours to burn off fuel before the pilot made an emergency landing on runway 29 at Perth Airport. As the aircraft touched down, on its main wheels, the pilot shut the engines down and activated the engine fire extinguishers, as a precautionary measure. The nose landing gear folded up as the nose was lowered to the runway.

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A post accident inspection indicated that one of the hydraulic lines, in the right hand landing gear extension system, split allowing the hydraulic fluid, used to activate the normal extension system, to escape. The split line also allowed the gas from the emergency extension system to escape. There was insufficient residual pressure in the system in either the normal or emergency modes to lock the nosewheel into the correct down position.

The possibility of a line failure is a known problem on the Cessna 441 aircraft. Fatigue cracking can occur at a bend in the line due to expansion and contraction of the bend resulting from pressure changes in the system. The operator had an inspection process in place aimed at disclosing any cracking prior to it becoming a safety problem. An inspection of the line, conducted prior to the flight, did not disclose the crack. The crack's location on the bend, longitudinal rather than transverse, probably prevented a hydraulic leak from becoming apparent until the crack was opened up, on the accident flight, by the system pressure.

### Safety Actions

The operator is in the process of replacing all the suspect landing gear hydraulic lines on all its aircraft regardless of their condition. They will continue to inspect the lines on a regular basis in accordance with the program already in place and have indicated that they will be replacing the lines, which are normally an 'on condition' item, at more regular intervals.

The CAA will notify all operators of Cessna 441 aircraft of the details of the occurrence and of the action taken by the operator.

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