

**Aviation Safety Investigation Report  
199400377**

**Amateur Built Aircraft  
EXEC 90**

**11 February 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:** 199400377      **Occurrence Type:** Accident  
**Location:** 1km S Cardinia  
**State:** VIC      **Inv Category:** 4  
**Date:** Friday 11 February 1994  
**Time:** 1815 hours      **Time Zone:** ESuT  
**Highest Injury Level:** Minor  
**Injuries:**

	Fatal	Serious	Minor	None	Total
Crew	0	0	1	0	1
Ground	0	0	0	0	0
Passenger	0	0	1	0	1
<b>Total</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>

**Aircraft Manufacturer:** Amateur Built Aircraft  
**Aircraft Model:** EXEC 90  
**Aircraft Registration:** VH-YCP      **Serial Number:** 5170  
**Type of Operation:** Non-commercial Practice  
**Damage to Aircraft:** Substantial  
**Departure Point:** Berwick VIC  
**Departure Time:** 1805 ESuT  
**Destination:** Kooweerup VIC

**Crew Details:**

Role	Class of Licence	Hours on Type	Hours Total
Not Determined	Private		500
Not Determined	Student	4.0	10

**Approved for Release:** Friday, August 12, 1994

The student pilot/owner and an experienced private helicopter pilot, who was not endorsed on type and did not hold a valid medical certificate, decided to ferry the helicopter. Enroute they elected to enter an autorotation to practise a forced landing from about 1,000 feet above the ground. When attempting a power recovery near the ground, they realised that the engine had stopped. During the autorotative touchdown the main rotor cut through the tail boom. The landing gear skid assembly broke and the helicopter rolled onto its left side.

No mechanical failure of the airframe or engine has been found which may have contributed to the accident.

At the time of the flight the relative humidity was about 88% and the outside air temperature about 13 degrees celsius; conditions were ideal for the formation of carburettor icing. The engine is water cooled and is fitted with a water jacket on the carburettor. If the tap adjoining the carburettor is turned on, hot water will circulate to warm the carburettor and thereby counteract carburettor icing. On the standard Rotorway EXEC 90, the tap must be turned on before flight because there is no means to turn it on from the cockpit. On VH-YCP, the tap was turned off.

Subsequent to the accident it has been noted that the carburettor air temperature gauge fitted to the console reads about 10 degrees celsius colder using the external air scoop, which is an Australian modification, as opposed to the original Rotorway design. Since the accident, the Civil Aviation Authority has amended the permits to fly. Until the matter of carburettor heat is resolved, the induction anti-icing system must be turned on for all flights in conditions of outside air temperature below 24 degrees celsius; and, flight in conditions of outside air temperature 10 degrees or below in visible moisture is not permitted.

### Significant Factors

The following factors were considered relevant to the development of the accident.

1. The carburettor heat water jacket was not turned on before the flight.
2. Prevailing conditions were conducive to the formation of carburettor icing.
3. The engine probably failed due to carburettor icing.