

**Aviation Safety Investigation Report  
198800114**

**Cessna 182-R**

**2 March 1988**

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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:** 198800114

**Occurrence Type:** Accident

**Location:** 7 km S Watheroo WA

**Date:** 2 March 1988

**Time:** 1406

**Highest Injury Level:** Nil

**Injuries:**

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

**Aircraft Details:** Cessna 182-R

**Registration:** VH-XYZ

**Serial Number:** 18268185

**Operation Type:** Aerial Work

**Damage Level:** Substantial

**Departure Point:** Watheroo WA

**Departure Time:** 1403

**Destination:** Jandakot WA

**Approved for Release:** 1/07/1988

#### **Circumstances:**

Shortly after takeoff and while climbing through 2000 feet at approximately 90 kts in light to moderate turbulence, the aircraft encountered unforecast, unavoidable severe turbulence. The aircraft suddenly rolled approximately 75 degrees to the left, and the pilot applied full right control wheel rotation and full right rudder. Control was regained, but during the latter part of the flight the pilot noticed a change in the directional flight characteristics of the aircraft. The turbulence appeared to have been associated with the development of localised "dust devils" or "willy-willies", which had not reached the visible stage. Subsequent examination of the aircraft revealed distortions in the right wing and empennage, consistent with the aircraft having suffered excessive inflight loads. The horn balance of the right elevator was bent, and the internal balance weight was loose. Weather conditions at the time of the occurrence were scattered cumulus, base 5000 feet; visibility 40 kms; surface wind, a gusty south-easterly; and temperature 25 degrees. The Manoeuvring Speed,  $V_a$ , was estimated to be 100 kts for the weight of the aircraft at the time the turbulence was encountered.

#### **Significant Factors:**

It was considered that the following factors were relevant to the development of the accident

1. The severe turbulence had not been forecast and the developing whirlwinds were not visible to the pilot.
2. The use of abrupt, full control deflections during recovery from an unusual attitude induced by turbulent conditions possibly aggravated the effects of the turbulence on the aircraft structure.

#### **Recommendaions:**

1. It is recommended that the Civil Aviation Authority publish further material to remind pilots of the relevance of an aircraft's Manoeuvring Speed, and the rate and magnitude of inputs to the flight controls during flight in turbulent conditions.